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MARCH–APRIL 1992

ELECTRIC PERSPECTIVES
The Magazine for Management in America's Investor-Owned Electric Utilities

Volume 16, Number 2

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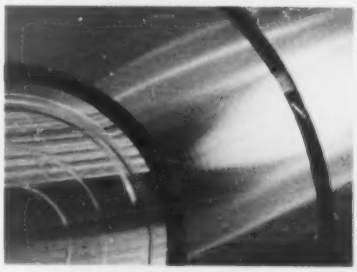

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To ensure that science, not drama, shapes environmental policy, industry must first regain the public trust.

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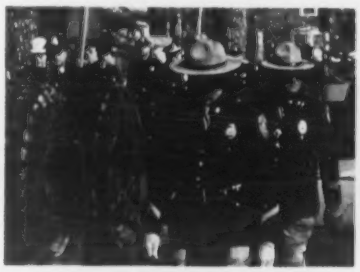

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Cover photo by Doug Buerlein / Virginia Power

STATISTICAL REVIEW

THIRD QUARTER SALES UP 1.4 PERCENT

Electricity sales to ultimate customers by investor-owned electric utilities increased by 1.4 percent to 575.7 million megawatthours (MWh) in the third quarter of 1991 from 567.5 million MWh in the third quarter of 1990. Warmer than usual weather and an increase in gross domestic product contributed to the sales growth.

As the class most affected by the weather, sales to residential customers showed a quarterly increase of 2.8 percent despite only a 1.0 percent increase in the number of such customers. Revenues from the residential class rose by 5.5 percent to $17.4 billion.

Commercial and industrial sales, which are typically more affected by economic activity than weather, totaled 174.0 million and 186.6 million MWh, respectively. On a quarter-to-quarter basis, commercial sales grew 1.2 percent while industrial sales actually declined 0.4 percent. The number of commercial customers grew a slight 0.5 percent; the number of industrial customers, a mere 0.2 percent. Revenues from the two classes grew by 4.7 and 2.4 percent, respectively.

Although the third quarter gross domestic product (GDP, in 1987 dollars and on an annual basis) recorded a 1.8 percent increase over the second quarter GDP, industrial activity as measured by the Federal Reserve Board Index of Production decreased to a seasonally adjusted average of 108.1 in the third quarter of 1991 from 110.5 in the third quarter of the previous year.

Contributed by Edison Electric Institute's Finance and Accounting Department.

Table 1
Third Quarter Customer, Sales, and Revenue Data for Investor-Owned Electric Utilities

	Three Months Ending September 30,			Twelve Months Ending September 30,		
	1991	1990	% Change	1991	1990	% Change
Number of Customers						
Residential	74,544,241	73,777,651	1.0	74,346,144	73,437,846	1.2
Commercial	9,363,986	9,314,214	0.5	9,334,688	9,237,585	1.1
Industrial	406,740	406,114	0.2	393,613	388,879	1.2
Street & Highway	147,123	141,245	4.2	144,593	139,195	3.9
Other Public Authorities	168,081	157,718	6.6	165,646	156,643	5.7
Railroads	23	23	0.0	24	23	4.3
Interdepartmental	468	471	(0.6)	471	474	(0.6)
Total Customers	84,630,662	83,797,436	1.0	84,385,179	83,360,645	1.2
Electricity Sales (MWh)						
Residential	197,231,253	191,932,810	2.8	685,180,265	669,789,959	2.3
Commercial	174,008,318	171,991,944	1.2	619,627,776	607,289,755	2.0
Industrial	186,633,980	187,373,101	(0.4)	714,783,918	715,027,655	(0.0)
Street & Highway	2,491,347	2,464,299	1.1	10,506,752	10,448,443	0.6
Other Public Authorities	14,425,717	12,884,485	12.0	53,672,457	51,567,403	4.1
Railroads	629,189	620,509	1.4	2,549,256	2,507,592	1.7
Interdepartmental	310,343	282,197	10.0	1,110,794	1,512,898	(26.6)
Total Sales	575,730,147	567,549,345	1.4	2,087,431,218	2,058,143,705	1.4
Revenues ($000)						
Residential	17,384,021	16,479,435	5.5	57,548,736	54,148,990	6.3
Commercial	13,841,924	13,221,397	4.7	47,578,712	44,975,112	5.8
Industrial	10,006,816	9,776,290	2.4	36,043,758	34,933,230	3.2
Street & Highway	318,331	304,566	4.5	1,277,030	1,225,462	4.2
Other Public Authorities	774,832	691,284	12.1	2,784,785	2,543,978	9.5
Railroads	47,168	44,182	6.8	176,051	163,676	7.6
Interdepartmental	25,749	26,272	(2.0)	92,335	96,276	(4.1)
Total Revenues	42,398,841	40,543,426	4.6	145,501,407	138,086,724	5.4

Source: Edison Electric Institute, Statistics Department.

FINANCIAL REVIEW

NON-RECURRING ITEMS PUSH THIRD QUARTER EARNINGS DOWN

Investor-owned electric utility earnings per share (EPS) before extraordinary items fell from $0.78 in the third quarter of 1990 to $0.72 in the third quarter of 1991, a drop of 7.7 percent. The drop was largely due to the net impact of non-recurring items. Third quarter 1991 non-recurring income-reducing items totaled $1.5 billion, 15.4 percent more than the $1.3 billion experienced in the third quarter of 1990. In addition, while there were no income-increasing items in 1991, such items totaled $230 million for the third quarter of 1990.

Without these non-recurring items, EPS before extraordinary items would have dropped only 1.1 percent, from $0.94 to $0.93. That decline was caused by lower allowance for funds used during construction (AFUDC) and phase-in plan accruals. Their total for the third quarter of 91 was $387 million lower than it was for the third quarter of 90.

Income Statement

Total electric operating revenues rose 3.8 percent from $42.8 billion to $44.5 billion on a quarter-to-quarter basis. (See Table 1.) Sales growth related to warmer than usual weather and rate relief granted over the past year were primarily responsible for the revenue increase. In addition, some companies reported increased fuel-cost adjustment revenues for the quarter, in part due to energy conservation expenses.

Total electric operating expenses increased 3.9 percent from $32.7 billion in the third quarter of 1990 to $34.0 billion in the third quarter of 1991.The increase, attributed to increased purchased power and net interchange, to other operation and maintenance, and to federal and other income tax expenses, was partially moderated by a $506 million decrease in fuel expense and a $278 million decrease in deferred income taxes.

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A Commitment to Success

Table 1
Investor-Owned Electric Utility Industry Statement of Income
(Millions of Dollars)

	Three Months Ending September 30,			Twelve Months Ending September 30,		
	1991	1990r	% Change[3]	1991	1990r	% Change[3]
Total Electric Operating Revenues[1]	$44,488	$42,847	3.8	$154,033	$146,601	5.1
Electric Operating Expenses						
Fuel	$8,332	$8,838	(5.7)	$30,871	$32,174	(4.1)
Purchased Power & Net Interchange	3,856	3,505	10.0	13,010	11,159	16.6
Other Operation & Maintenance	10,342	9,795	5.6	38,739	36,308	6.7
Depreciation & Amortization	4,209	3,947	6.6	16,272	15,447	5.3
Costs Deferred Under Rate Phase-In Plans	(34)	(160)	(78.7)	(273)	(747)	(63.5)
Taxes Other Than Income Taxes	3,335	3,058	9.1	12,165	11,292	7.7
Income Taxes: Federal & Other	3,599	3,095	16.3	7,946	7,065	12.5
Deferred Income Taxes	407	685	(40.6)	1,698	1,932	(12.1)
Investment Tax Credits, Net	(7)	(11)	(30.8)	(182)	(43)	323.3
Total Electric Operating Expenses	$34,038	$32,753	3.9	$120,247	$114,587	4.9
Electric Operating Income	$10,451	$10,094	3.5	$33,786	$32,014	5.5
Other Utility Operating Income	(19)	19	N.M.	1,088	1,105	(1.6)
Total Utility Operating Income	$10,431	$10,113	3.1	$34,874	$33,119	5.3
Other Income & Deductions, Net	($871)	($427)	104.0	($1,268)	($661)	91.8
Phase-In Deferrals	64	173	(62.8)	468	899	(47.9)
Allowance for Other Funds Used During Construction	173	260	(33.4)	747	1,181	(36.7)
Total Income Before Interest Charges	$9,797	$10,119	(3.2)	$34,822	$34,539	0.8
Interest Charges						
Interest on Long-Term Debt	$3,842	$3,839	0.1	$15,370	$15,273	0.6
Other Interest Expenses & Charges	412	398	3.6	1,673	1,427	17.3
Allowance for Borrowed Funds Used During Construction	(151)	(216)	(30.0)	(670)	(975)	(31.2)
Net Interest Expenses & Charges	$4,103	$4,020	2.1	$16,372	$15,726	4.1
Net Income Before Extraordinary Items	$5,694	$6,099	(6.6)	$18,450	$18,813	(1.9)
Extraordinary Items	0	(36)	N.M.	(39)	(58)	(31.7)
Cumulative Effect of a Change in Accounting Principle	0	0	N.M.	(1)	295	N.M.
Net Income	$5,694	$6,063	(6.1)	$18,410	$19,050	(3.4)
Preferred Dividends Declared	487	498	(2.3)	1,953	2,019	(3.2)
Net Income Available for Common	$5,208	$5,565	(6.4)	$16,456	$17,032	(3.4)
Common Dividends Declared	3,417	3,239	5.5	13,541	13,005	4.1
Additions to Retained Earnings	$1,791	$2,326	(23.0)	$2,916	$4,027	(27.6)
Average Shares Outstanding (Millions)	7,239	7,145	1.3	7,299	7,160	1.9
Earnings Per Share Before Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.72	$0.78	(7.7)	$2.26	$2.35	(3.8)
Earnings Per Share After Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.72	$0.78	(7.7)	$2.25	$2.38	(5.5)
Common Dividends Per Share[2]	$0.47	$0.45	4.4	$1.86	$1.82	2.2

SOURCE: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.
[1]Revenues are adjusted for intra-industry electricity sales for resale.
[2]Based on average shares outstanding as reported to Edison Electric Institute by survey respondents and adjusted for stock splits.
[3]Percent changes may reflect independent roundings.
r-Revised to reflect company restatements.
N.M.-Not Meaningful.

Table 2
Investor-Owned Electric Utility Industry Balance Sheet
(Millions of Dollars)

Assets	September 30, 1991	September 30 1990r	% Change[2]
Utility Plant[1]			
Utility Plant (Including Nuclear Fuel)	$529,178	$508,462	4.1
Less Accumulated Depreciation	166,528	154,723	7.6
Total	$362,650	$353,739	2.5
Construction Work in Progress	21,151	24,602	(14.0)
Net Utility Plant	$383,801	$378,341	1.4
Investments	28,968	26,458	9.5
Current Assets	47,572	44,624	6.6
Deferred Debits	35,800	37,925	(5.6)
Total Assets	$496,141	$487,348	1.8
Capitalization & Liabilities			
Capitalization			
Common Stock	$95,694	$93,985	1.8
Retained Earnings	55,917	55,260	1.2
Preferred Stock	25,140	25,324	(0.7)
Long-Term Debt	174,087	172,127	1.1
Total Capitalization	$350,839	$346,696	1.2
Current Liabilities			
Short-Term Debt	$9,894	$11,027	(10.3)
Long-Term Debt Due Currently	9,115	6,548	39.2
Other Current Liabilities	35,750	34,017	5.1
Total Current Liabilities	$54,759	$51,591	6.1
Deferred Credits			
Capital Lease Obligations, Non-Current Portion	$3,396	$3,637	(6.6)
Accumulated Deferred Income Taxes	53,030	51,610	2.8
Accumulated Deferred Investment Tax Credits	15,080	15,524	(2.9)
Other Deferred Credits	19,037	18,290	4.1
Total Deferred Credits	$90,543	$89,060	1.7
Total Capitalization & Liabilities	$496,141	$487,348	1.8

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.

[1]Includes non-electric utility plant.
[2]Percent changes may reflect independent roundings.
r-Revised to reflect company restatements.

The drop in fuel expense, in turn, was related to relatively lower fuel prices and to the replacement of fossil fuels with nuclear fuel. Much of the drop in deferred income tax expense resulted from IRS audit adjustments.

Electric operating income increased 3.5 percent on a quarter-to-quarter basis, nudging the electric operating ratio up from 76.4 percent for the third quarter of 1990 to 76.5 percent for the third quarter of 1991.

Net losses in other income and deductions more than doubled from third quarter to third quarter, jumping from $427 million to $871 million. In both instances, the net losses were primarily due to non-recurring write-offs.

AFUDC continued to decline, dropping from $476 million to $324 million. AFUDC as a percentage of net income available for common was 6.2 for the third quarter of 1991, down from 8.6 for the third quarter of 1990. On an annual basis, the ratio dropped from 12.7 percent to 8.6 percent.

Total phase-in plan accruals also continued to drop, falling 70.6 percent from $333 million in the third quarter of 1990 to $98 million in the third quarter of 1991. That $98 million is the lowest quarterly amount reported for phase-in plan accruals since Edison Electric Institute began tracking them in the first quarter of 1987.

The pre-tax interest coverage ratio with AFUDC for third quarter 91 was 3.28 times versus the 3.33 times recorded for third quarter 90. On an annual basis, the ratio dropped from 2.66 times for the year ending September 30, 1990, to 2.64 for the following year.

On an annual basis, the return on average common equity (ROE) before non-recurring items was 13.3 percent, down slightly from the 13.4 percent reported for the previous year. (As reported here, ROE covers all utility operation.) After non-recurring items, ROE before extraordinary items and accounting changes dipped from 11.2 percent to 11.0 percent.

Balance Sheet

Investments increased 9.5 percent from $26.5 billion as of September 30, 1990, to $29.0 billion as of September 30, 1991. (See Table 2.) The increase reflects various companies' acquisition of oil and gas reserves, increased leveraged leasing, development of coal reserves, purchases of transport and trade equipment, and increased investment in securities. In addition, one company reclassified the disallowed portion of a plant to the investment account from the utility plant account.

Total capitalization for the twelve-month period increased 1.2 percent. The common equity ratio edged up from 43.0 percent to 43.2 percent. Common stock increased 1.8 percent while retained earnings increased 1.2 percent. The portion of preferred stock in the capitalization ratio continued to decline, dropping from 7.3 percent to 7.2 percent, and long-term debt increased 1.1 percent.

Tables 1 and 2 are based on unaudited reports submitted by a sample of investor-owned electric utilities. The sample represents approximately 99.5 percent of the industry's total assets and 99.2 percent of its electric utility revenues. With the use of Standard & Poor's Utility Compustat II database, data are adjusted to represent the entire electric utility industry. Prior year data are also revised to reflect all company restatements.

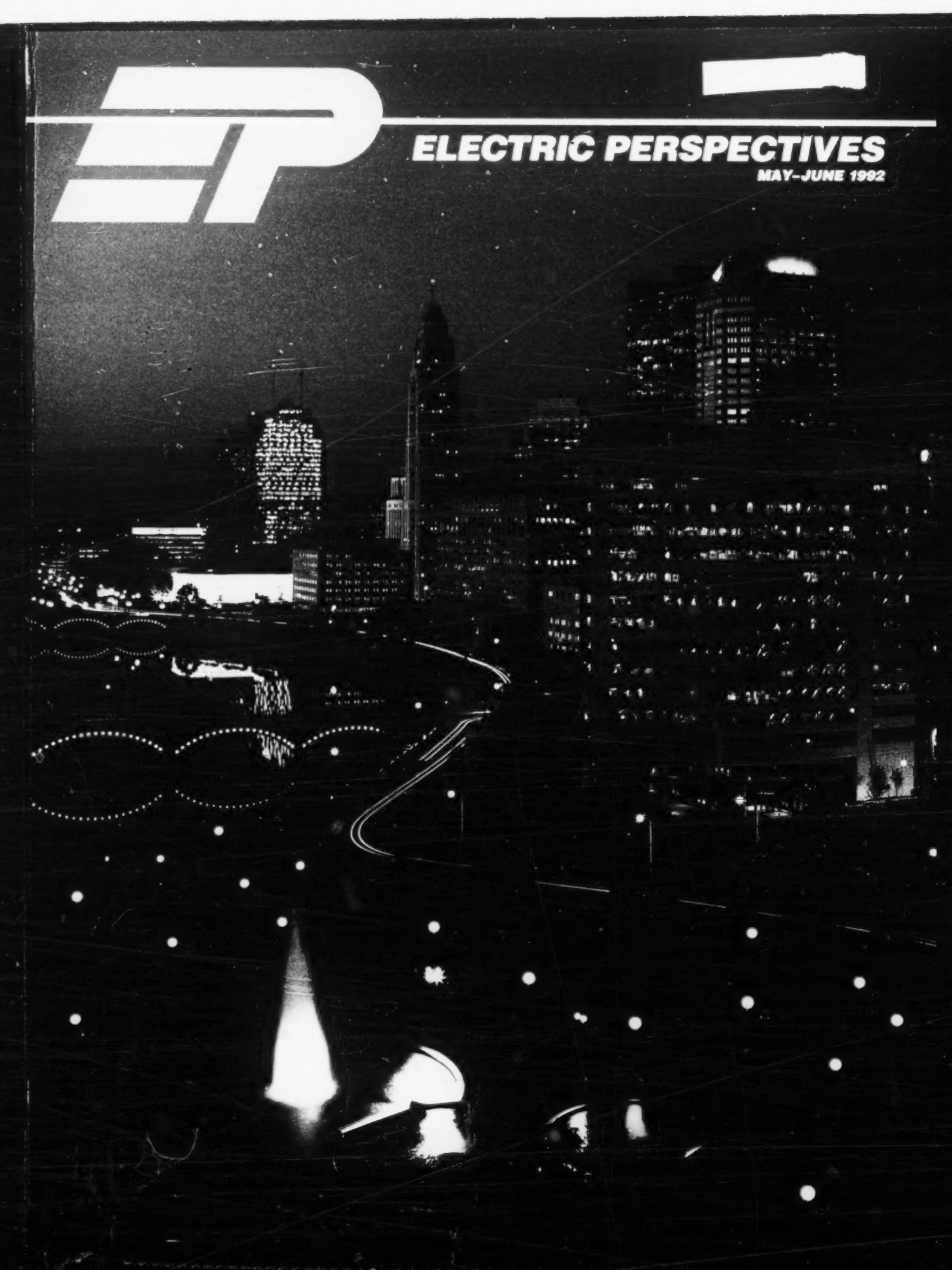
Contributed by Edison Electric Institute's Finance and Accounting Department.

REGULATORY REVIEW

THE SPECTRUM RESERVE BATTLE HEATS UP

Advancing its drive to make room on the broadcast spectrum for emerging personal communications networks, the Federal Communications Commission issued a proposal in January that could force expensive changes in utility operations and, most important, reduce electric reliability nationwide.

At issue is the portion of the microwave spectrum's 2 gigahertz (GHz) used by utilities, railroads, pipelines, police and fire departments, and others to manage their day-to-day operations. For example, at Atlantic Electric, our 19-tower microwave system links office, fleet, generation, and transmission and distribution facilities throughout its southern New Jersey service territory. The system provides the voice, data, and other communications capabilities essential to reliable electric service. It is especially valuable during storms when accurate, rapidly reported information helps us identify and locate problems virtually the moment they occur. The system carries the command and control functions of our energy management system, which regulates the transmission of power and monitors Atlantic Electric's interconnection with other electric utilities and the Pennsylvania-Jersey-Maryland power pool. It also provides the transmission links for the mobile radio system used by our vehicle fleet. Completed less than a year ago at a cost of $8.3 million, this microwave system is an integral part of our operations.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Cover photo of Columbus, Ohio, skyline by Steven L. Alexander / Uniphoto

FINANCIAL REVIEW

1991 ANNUAL EPS BEFORE EXTRAORDINARY ITEMS INCREASES 4.3 PERCENT OVER 1990

Investor-owned electric utility earnings per share (EPS), before extraordinary items, increased 4.3 percent from $1.88 per share for the 12 months ending December 31, 1990, to $1.96 per share for the corresponding 12 months in 1991.

Despite a drop in the allowance for funds used during construction (AFUDC) and phase-in plan accruals of $1.5 billion, EPS growth was sustained by a 1.6 percent increase in sales and a related 5.0 percent increase in annual electric operating revenues (see "Statistical Review").

Also contributing to the increase in EPS was a decline in income-reducing non-recurring items.

The EPS, before extraordinary and non-recurring items, increased from $0.42 in the fourth quarter of 1990 to $0.43 in the fourth quarter of 1991—a 2.4 percent increase. But the EPS before extraordinary items and after non-recurring items leapt 28.6 percent, from $0.21 in 1990 to $0.27 in 1991. (See Table 1.)

*As **Electric Perspectives** went to press, El Paso Electric Company (which filed for bankruptcy in January) reported a 1991 net loss of $564.3 million. Restructuring costs, higher interest on debt, and higher property taxes accounted for $54.1 million; $289.1 million was due to the utility's inability to collect deferred rate hikes; and $221.1 million was lost when the utility could not pay on letters of credit. This news was not announced in time for use in the accompanying figures—EP will provide additional details in our next issue.*

In 1991, net non-recurring items that affected income were $330.1 million less than in 1990.

Income Statement

The 5-percent gain in total electric operating revenues—from $149 billion in 1990 to $156.6 billion in 1991—reflects the rate increases granted over the past two years. Indeed, the 1991 approved rate increase amount was the highest amount granted since the $5.4 billion approved in 1983.

Total annual electric operating expenses kept pace, however, increasing 4.9 percent from $119.4 billion in 1990 to $125.2 billion in 1991. It should be noted, though, that the relationship between operating revenues and expenses has remained constant, with an operating ratio of 80 percent.

Fuel expense decreased 4.3 percent from 1990's $32.2 billion to $30.8 billion in 1991. The decline was due to switching to lower-cost fuels and increased power purchases.

The pre-tax interest coverage ration, without factoring in AFUDC, increased 2.45 times in 1991, up

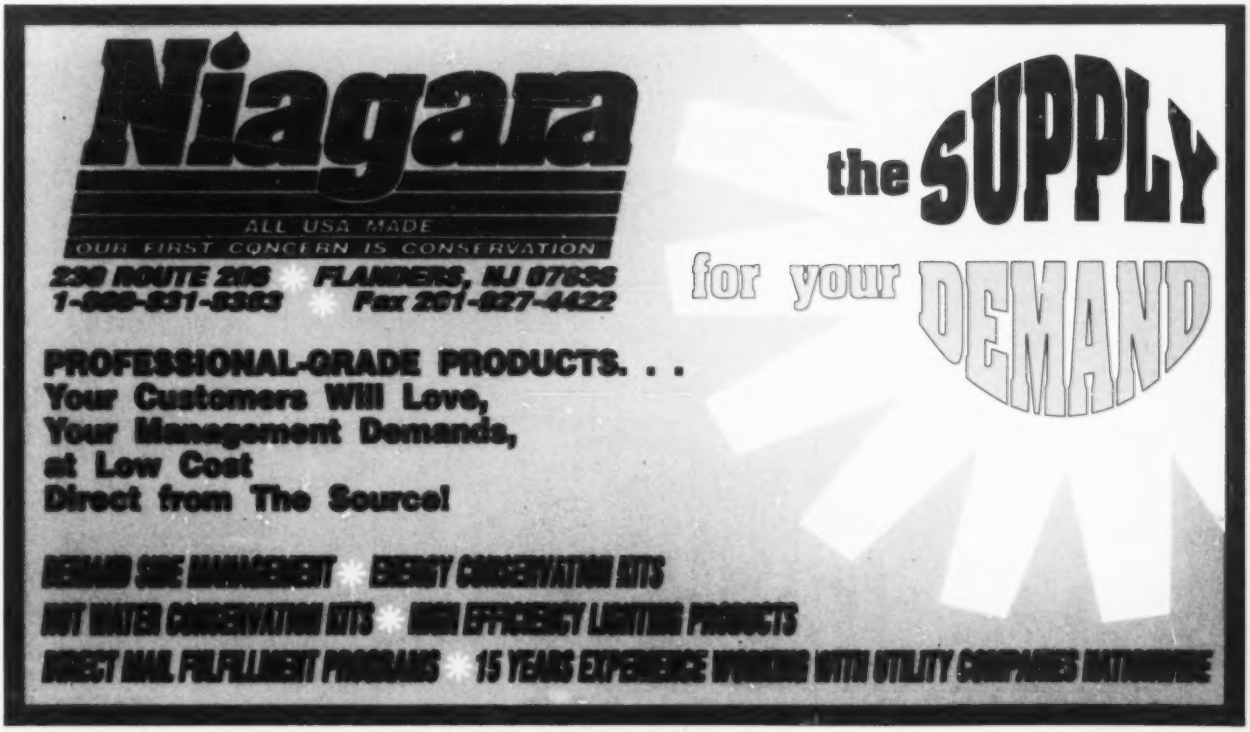
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Table 1
Investor-Owned Electric Utility Industry Statement of Income
(Millions of Dollars)

	Three Months Ending December 31,			Twelve Months Ending December 31,		
	1991	1990r	% Change[3]	1991	1990r	%Change[3]
Total Electric Operating Revenues[1]	$37,750	$36,365	3.8	156,564	$149,138	5.0
Electric Operating Expenses						
Fuel	$7,380	$7,831	(5.8)	30,778	$32,151	(4.3)
Purchased Power & Net Interchange	3,739	3,316	12.8	13,752	12,152	13.2
Other Operation & Maintenance	11,422	10,824	5.5	42,244	39,882	5.9
Depreciation & Amortization	4,096	3,837	6.7	16,583	15,552	6.6
Costs Deferred Under Rate Phase-In Plans	(87)	(119)	26.8	(263)	(749)	(64.9)
Taxes Other Than Income Taxes	3,046	2,827	7.7	12,433	11,557	7.6
Income Taxes: Federal & Other	1,157	1,277	(9.4)	7,840	7,232	8.4
Deferred Income Taxes	476	197	141.3	2,001	1,685	18.7
Investment Tax Credits, Net	(85)	(91)	(6.5)	(194)	(94)	105.8
Total Electric Operating Expenses	$31,144	$29,899	4.2	$125,175	$119,368	4.9
Electric Operating Income	$6,606	$6,466	2.2	$31,390	$29,770	5.4
Other Utility Operating Income	347	309	12.3	1,141	1,083	5.4
Total Utility Operating Income	$6,954	$6,776	2.6	32,530	$30,853	5.4
Other Income & Deductions, Net	(621)	(1,025)	(39.4)	(972)	(1,012)	(4.0)
Phase-in Deferrals	106	178	(40.5)	378	698	(45.8)
Allowance for Other Funds Used During Construction	144	228	(37.1)	684	1,102	(37.9)
Total Income Before Interest Charges	$6,582	$6,157	6.9	32,620	$31,640	3.1
Interest Charges						
Interest on Long Term Debt	$3,845	$3,877	(0.8)	15,384	15,442	(0.4)
Other Interest Expenses & Charges	369	464	(20.5)	1,592	1,581	0.7
Allowance for Borrowed Funds Used During Construction	(132)	(173)	(23.9)	(622)	(864)	(28.0)
Net Interest Expenses & Charges	$4,081	$4,167	(2.1)	$16,353	$16,159	1.2
Net Income Before Extraordinary Items	$2,501	$1,990	25.7	$16,267	$15,481	5.1
Extraordinary Items	(44)	7	N.M.	(84)	(28)	(194.2)
Cumulative Effect of a Change in Accounting Principle	25	0	N.M.	25	297	N.M.
Net Income	$2,481	$1,997	24.3	$16,208	$15,749	2.9
Preferred Dividends Declared	501	491	2.0	1,964	2,002	(1.9)
Net Income Available for Common	$1,981	$1,506	31.5	$14,244	$13,748	3.6
Common Dividends Declared	3,522	3,314	6.3	13,801	13,119	5.2
Additions to Retained Earnings	($1,541)	($1,808)	(14.8)	$443	$629	(29.6)
Average Shares Outstanding (Millions)	7,302	7,196	1.5	7,299	7,160	1.9
Earnings Per Share Before Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.27	$0.21	28.6	$1.96	$1.88	4.3
Earnings Per Share After Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.27	$0.21	28.6	$1.95	$1.92	1.6
Common Dividends Per Share[2]	$0.48	$0.46	4.3	$1.89	$1.83	3.3

SOURCE: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service
[1]Revenues are adjusted for intra-industry electricity sales for resale.
[2]Based on average shares outstanding as reported to Edison Electric Institute by survey respondents and adjusted for stock splits.
[3]Percent changes may reflect independent roundings.
r-Revised to reflect company restatements.
N.M.-Not Meaningful.

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Table 2
Investor-Owned Electric Utility Industry Balance Sheet
(Millions of Dollars)

Assets	December 31, 1991	December 31, 1990r	% Change[2]
Utility Plant[1]			
Utility Plant (Including Nuclear Fuel)	$533,836	$511,671	4.3
Less Accumulated Depreciation	170,172	156,178	9.0
Total	$363,664	$355,494	2.3
Construction Work in Progress	21,641	24,541	(11.8)
Net Utility Plant	$385,305	$380,034	1.4
Investments	29,342	27,244	7.7
Current Assets	45,947	44,733	2.7
Deferred Debits	38,303	36,249	5.7
Total Assets	$498,897	$488,260	2.2
Capitalization & Liabilities			
Capitalization			
Common Stock	$97,146	$94,275	3.0
Retained Earnings	54,264	52,807	2.8
Preferred Stock	24,993	25,458	(1.8)
Long-Term Debt	174,730	171,230	2.0
Total Capitalization	$351,133	$343,770	2.1
Current Liabilities			
Short-Term Debt	$10,378	$11,003	(5.7)
Long-Term Debt Due Currently	8,591	7,362	16.7
Other Current Liabilities	36,764	36,990	(0.6)
Total Current Liabilities	$55,733	$55,355	0.7
Deferred Credits			
Capital Lease Obligations, Non-Current Portion	$3,980	$4,122	(3.4)
Accumulated Deferred Income Taxes	53,519	51,394	4.1
Accumulated Deferred Investment Tax Credits	14,890	15,470	(3.7)
Other Deferred Credits	19,642	18,151	8.2
Total Deferred Credits	$92,031	$89,136	3.2
Total Capitalization & Liabilities	$498,897	$488,260	2.2

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.

[1]Includes non-electric utility plant.
[2]Percent changes may reflect independent roundings.
r-Revised to reflect company restatements.

from 2.31 times in 1990. When AFUDC is included, the ratio increased to 2.53 times in 1991 from 2.43 times in 1990.

The return on equity (ROE), before non-recurring items are taken into account, rose to 11.7 percent from 1990's 11.4 percent.

The dividend payout ratio, after extraordinary items and before the effect of non-recurring items, increased to 79.3 percent, a climb of 3.2 percentage points from 1990's level.

Balance Sheet

On the balance sheet (see Table 2), investments for the investor-owned electric utility industry jumped 7.7 percent, from $27.2 billion as of December 31, 1990 to $29.3 billion in 1991. The increase in investments consisted in part of additions to nuclear decommissioning funds and oil and gas properties, an increase in partnerships and joint ventures, new leveraged leases, and marketable securities.

The largest percentage increase in capitalization was in common stock, which showed a 3 percent rise from $94.3 billion in 1990 to $97.1 billion in 1991. The increase was induced by record-high price levels in equity markets coinciding with some utilities' needs for equity financing. In fact, there was an estimated $900 million of new stock financing in 1991. It should be noted that the $900 million in new stock offerings is exclusive of an estimated $1.9 billion in stock purchase plans.

New financing led to a small percentage rise in the equity capitalization ratio, from 42.8 percent in 1990 to 43.1 in 1991. The amount of retained earnings—a 2.8 percent increase over 1990—also contributed to the higher ratio.

Long-term debt increased 2 percent, from $171.2 billion in 1990 to $174.7 billion in 1991. The embedded cost of long-term debt remained constant at 8.9 percent.

Tables 1 and 2 reflect the unaudited reports submitted by a sample that represents 99.5 percent of the investor-owned utility industry's total assets and 99.2 percent of its total revenues. The sample data is then adjusted to represent the entire investor-owned electric utility industry by using the Standard & Poor's Utility Compustat II database. The prior year data also has been revised to reflect all company restatements.

Contributed by Edison Electric Institute's Finance and Accounting Department.

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STATISTICAL REVIEW

ANNUAL ELECTRICITY SALES AND REVENUES UP

U.S. electricity sales to ultimate customers by investor-owned electric utilities rose 1.6 percent, from 2,061 million MWh in 1990 to 2,095 in 1991. With that came a 5.0 percent jump in revenues, the highest annual increase since 1984. Economic realities, however, dulled the positive figures.

Lower real electricity prices and favorable weather for electricity demand added to the sales growth. This was, however, the fourth consecutive decline in the rate of sales increases.

Rate increases fueled the rise in revenue. But with inflation, electricity's real price has fallen 17.9 percent since 1982 (1991's drop was 0.4 percent), due partly to decreasing (since 1983)allowed rates of return and increasing capacity.

With a warm summer, 1991 sales to residential customers rose 3.3 percent, as did revenues, which recorded a 6.6 percent jump (though the sector grew only 1.1 percent). Cooling degree days increased 11.4 percent over 1990 and were 16.4 percent higher than in normal year. Heating degree days, increasing 8.4 percent, were 8.5 percent lower than normal.

The negative first quarter preceded 1.8 and 1.4 percent increases in the second and third quarters respectively. But fourth-quarter GDP (gross domestic product in 1987 dollars) increased only 0.4 percent; the entire economy declined 0.7 percent for the year. Consequently, commercial sales in 1991 rose only 1.8 percent (the lowest increase since 1974), and industrial sales actually declined 0.4 percent. The last time annual industrial sales fell was 1986.

Contributed by Edison Electric Institute's Finance and Accounting Department.

Fourth Quarter Customer, Sales, and Revenue Data for Investor-Owned Electric Utilities

	Three Months Ending December 31,			Twelve Months Ending December 31,		
	1991	1990	% Change	1991	1990	% Change
Number of Customers						
Residential	74,784,039	74,092,498	0.9	74,519,029	73,708,657	1.1
Commercial	9,378,464	9,326,565	0.6	9,347,663	9,277,116	0.8
Industrial	395,095	393,586	0.4	393,990	392,352	0.4
Street & Highway	145,021	142,690	1.6	145,176	140,585	3.3
Other Public Authorities	170,545	159,150	7.2	168,494	157,561	6.9
Railroads	23	24	(4.2)	24	23	4.3
Interdepartmental	468	466	0.4	471	475	(0.8)
Total Customers	84,873,655	84,114,979	0.9	84,574,847	83,676,769	1.1
Electricity Sales (MWh)						
Residential	160,616,816	156,082,969	2.9	689,714,112	667,527,965	3.3
Commercial	149,780,562	147,757,715	1.4	621,650,623	610,394,569	1.8
Industrial	178,459,946	179,062,805	(0.3)	714,181,059	717,338,598	(0.4)
Street & Highway	2,821,264	2,811,782	0.3	10,516,234	10,454,5210.6	
Other Public Authorities	13,476,224	12,363,100	9.0	54,785,581	51,042,615	7.3
Railroads	626,234	628,143	(0.3)	2,547,347	2,484,931	2.5
Interdepartmental	396,166	303,675	30.5	1,203,285	1,430,455	(15.9)
Total Sales	506,177,212	499,010,189	1.4	2,094,598,241	2,060,673,654	1.6
Revenues ($000)						
Residential	13,312,563	12,720,637	4.7	8,140,662	54,537,660	6.6
Commercial	11,437,336	11,145,208	2.6	7,870,843	45,587,467	5.0
Industrial	8,777,574	8,751,092	0.3	3,070,240	35,267,284	2.3
Street & Highway	324,280	318,353	1.9	1,282,958	1,237,385	3.7
Other Public Authorities	692,259	636,146	8.8	2,840,899	2,551,694	11.3
Railroads	43,235	41,587	4.0	177,699	163,490	8.7
Interdepartmental	6,899	22,441	(69.3)	76,793	102,870	(25.3)
Total Revenues	34,594,147	33,635,462	2.9	146,460,094	139,447,850	5.0

Source: Edison Electric Institute, Statistics Department.

REGULATORY REVIEW

APPROVED RATE INCREASES AT EIGHT-YEAR HIGH

Investor-owned electric utilities were granted $5.2 billion in rate increases last year, an 84 percent increase over 1990's total and the highest amount approved since 1983. Increases associated with five companies' recovery of costs related to nuclear plants accounted for $2.1 billion of the total.

The average rate increase regulators approved in 1991 was $51.8 million, almost double the amount averaged in 1981 when the annual total for approved rate increases peaked at $8.3 billion. The $51.8 million average topped last year's $36.5 million average by 42 percent. Regulators approved an average of 69 percent of the amounts requested by utilities. In 1990 they approved only 63 percent.

Total approved annual rate decreases continued their four-year slide, declining 38 percent from $351.7 million in 1990 to $218.5 million in 1991, the lowest amount recorded since 1985. Analysts attribute the downward trend to the natural dissipation of the effects of the Tax Reform Act of 1986. The average rate decrease approved in 1991 was only $10.9 million, down sharply from the $14.1 million averaged in 1990.

The amount of rate increases filed last year totaled $5.9 billion, virtually the same amount filed in 1990. The number of increase filings grew, however, moving from 82 to 91, the highest number of increases filed since 1985. The number of rate decreases filed in 1991 held steady at 10, but the total amount, $33.9 million, dropped to the lowest level since 1985.

Utilities filing applications with state commissions during the year requested an average return on equity of 13.2 percent, down from the 13.3 percent requested in 1990. The average return on equity allowed for rate cases decided during the year was 12.5 percent, down from 12.8 the previous year.

The backlog of rate increase cases pending at year-end decreased to 56 (representing $4.0 billion) for 1991 from 71 (representing $5.9 billion) for 1990. The number of pending decrease cases crept up from 2 (representing $169.2 million) to 3 (representing only $10.4 million). The estimated average regulatory lag for rate cases before state commissions during 1991 was 9.7 months, up significantly from the 7.7 months recorded in 1990.

The table above is based on Edison Electric Institute's Quarterly Rate Action Surveys, which are compiled by EEI's rate regulation department. The surveys include cases before the Federal Energy Regulatory Commission, state commissions, and municipal bodies that regulate investor-owned electric utilities. Approved cases are reported in the quarter during which the rate change goes into effect. If a commission orders a phased-in rate increase, the total dollar amount of all phases is reported in the quarter during which the commission issued its order. Only the final denial of an increase in rates is reported as denied. When a utility is granted less of an increase than filed for, the remainder is not reported as denied; however, when a utility seeks an increase and instead is ordered to decrease its rates, the amount of the increase sought is reported as denied and the amount of the decrease ordered is reported as an approved decrease.

Contributed by Edison Electric Institute's Finance and Accounting Department.

1991 Quarterly Electric Rate Increases
(Thousands of Dollars)

	Filed During Period		Pending At End of Period		Approved During Period	
	No.	($000)	No.	($000)	No.	($000)
First	18r	436,417r	69	3,487,771r	23	1,668,424
Second	31	2,774,727r	72	4,820,179r	28	1,189,776
Third	20	799,056	71	4,484,297	16	766,595
Fourth	22	1,870,340	56	3,962,964	34	1,609,574
Total	91	5,880,540	56	3,962,964	101	5,234,369

r = revised

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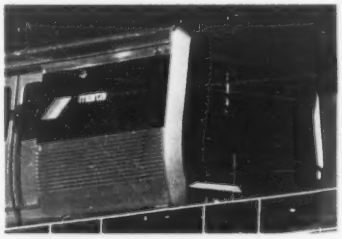

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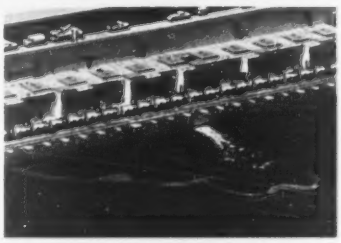

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Cover photo by Jeff Zaruba / Folio, Inc.

SAVING ENERGY WITH ELECTRICITY

by Clark W. Gellings and Thomas Morron

CO_2 emissions increase when we burn our primary fuels. Here's an intelligent way to keep combustion down and growth up.

Ours is an age in which images very often speak louder than words—and all too often, unfortunately, the image of an electric power plant sending smoke into the air has come to stand for much of what threatens the environment, however much it also represents industry and progress.

Emissions—and consequently electric utilities—are a key focus in the news today: global-warming issues, proposed carbon dioxide (CO_2) reduction legislation, Earth–Summit timetables and requirements for worldwide reduction efforts, carbon taxes, markets for emission allowances. Even though total U.S. CO_2 emissions grew by only 7 percent from 1973 to 1990—and went from 4 pounds for each dollar of gross national product (GNP) in 1973 to 2.34 in 1990—CO_2 is the most common greenhouse gas and the easiest to produce, so it gets the most intense scrutiny. (See the sidebar, "What's Practical?")

But that smokestack's negative image is deceiving. Far from being the problem, electric power promises to provide part of the emission-reduction solution.

The wider use of intelligent electrification—that is, the substitution of electricity for less efficient or less productive forms of energy—could help us significantly reduce CO_2 and other potentially harmful emissions. And it could do so without requiring us to sacrifice the steady improvement in the quality of life that energy use has granted us.

Quads Saved, Quads Earned

Electrification's potential is enormous. In recent years, its use and efficiency have contributed to the steady improvement of U.S. economic efficiency. During the economic expansion of the 1980s, electricity growth paralleled GNP growth while real electricity prices declined 16 percent and overall energy efficiency improved 11 percent. Electricity simply enabled us to do more with far less energy—today, in fact, the nation uses only 7 percent more primary energy than it did in 1973, yet the GNP has increased some 46 percent. The improvement in energy efficiency through electrification means that by 2010 the rate of increase in primary energy consumption is expected to shrink to less than half the annual rate of GNP growth. Today, the use of electricity accounts for 36 percent of total U.S. energy consumption; by 2000, that is expected to grow to 42 percent.

Of course, primary energy—energy that comes directly from such combustible sources as oil and natural gas—is the emissions culprit and major electricity

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Richard Rating / Folio

generator. Currently, the nation requires 86 quadrillion Btus (quads) of primary energy. A 1991 study conducted by the Electric Power Research Institute suggests that by replacing existing fossil-fuel technologies with more energy-efficient electric alternatives, we could cut primary energy use by as much as 7 quads, in turn reducing CO_2 emissions by nearly 350 million tons a year by 2010. With the potential benefits of demand-side management programs, the nation could save an additional estimated 4.5 quads of primary energy and cut CO_2 emissions by 335 million more tons a year. The wider use of electricity in the future could actually reduce the nation's primary energy consumption by 28 percent and its CO_2 emissions from electric generation by 26 percent by 2010.

The net result? In spite of all the talk about legislation for CO_2 reduction, a total increase of 250 billion kilowatthours by 2010 could mean a total reduction of primary energy use of 11.5 quads, reducing CO_2 emissions by an enormous total of 685 million tons.

If skepticism greets such claims, it's not surprising. The notion of saving energy and reducing air emissions by using more electricity at first seems counterintuitive. Primary energy fuels such as oil and gas require no conversion process; with between 10 and 16 percent lost in refining and delivery, a unit of primary energy extracted from an oil or gas well still provides between .84 and .9 units of energy for end-use application. Because energy is required to convert primary fuel sources to electricity, however, one unit of primary energy yields only about .31 units of electrical energy, with today's generation of power plants. Add to that an estimated 8 percent loss in transmission and delivery, and one unit of primary energy shrinks to only about .29 units of electrical energy by the time it is ready to be used.

So how can it be possible to save energy—and reduce the environmental impact of its use—by using more electricity?

More efficient than a coal-burning furnace, and with higher energy intensity, an electric furnace—here melting scrap steel for reuse—could cut CO_2 emissions by as much as 55 million tons by 2010.

Gerard Fritz / Uniphoto

The answer is found in examining total resource requirements. For the most part, electric-based technologies are far more energy-efficient than conventional fossil-fuel technologies. They are so efficient, in fact, that many of them more than make up for conversion losses, yielding net energy savings and, as a consequence, reducing the emissions associated with fossil-fuel use.

Today, with growing concern about environmental impact on the one hand and the bottom line of energy costs on the other, energy efficiency is beginning to take center stage. And electricity's unique advantages are clear.

Vital Characteristics

Consider electricity's efficiency and value in terms of its diverse utility (if you will). Other energy forms can meet certain needs more efficiently than electricity but are extremely limited in their range of application. As an energy form, electricity can meet all of a customer's energy needs—comfort, convenience, appearance—as well as facilitate the achievement of other needs—results from medical diagnostic tests, money from automatic tellers, and data processing from personal computers are just a few examples.

Electricity can deliver packages of concentrated, precisely controlled energy and information efficiently to any point. Also, it offers society greater "form value" that other forms of energy. Form value affords flexibility, which in turn allows technical innovation and enormous potential for economic efficiency and growth.

Let's take a closer look at its attributes from the technical, economic, and resource-use perspectives.

First, on the technical side. Residential appliances, building energy systems, and industrial processes often involve the interaction of energy and matter to modify materials, pump refrigerants or fluids, or transform materials from one form to another. These kinds of transformations and movements involve three categories of *electrical phenomena:*

- Electromotive phenomena occur when a current flows in a conductor located next to a magnetic field, which produces a force in the conductor. The most prominent example is the electric

motor, by far the most efficient and effective source of motive power. Used to drive a vapor-compression system for refrigeration or air conditioning, for example, electricity can reach 90 percent efficiency. Electromotive forces can be applied also to material processing. In electromagnetic forming, electricity can exert a force without physical contact, permitting precision manufacturing of metal parts by rapidly accelerating them against a form.

■ The simplest use of electrothermal phenomena is direct ohmic dissipation—attaching electrodes to a material and sending a current through it. Electromagnetic induction, also, can heat conductive materials without direct physical contact: The fluctuating magnetic field produced by an alternative-current coil next to the material induces eddy current in it., which are dissipated to produce heat. Certain nonconductive materials can be heated dielectrically, a process that occurs when a material containing polar molecules (water, for instance) is placed in a rapidly alternating electrical field. Dielectric losses produce heat—that's what boils water in a microwave oven.

■ Electrolytic phenomena are electromotive forces acting at the molecular level. Electrolysis is best known for its use in producing such basic materials as aluminum and chlorine.

By *input energy density*, we mean the measure of producible heat, and electricity has it over combustible energy forms. In combustion processes using chemical fuel (oil and gas, for example), the maximum achievable temperature has a practical limit of about 3000°F—its "adiabatic flame temperature." When heating electrically, however, no inherent thermody-

namic limit exists. Arc-produced plasmas, for example, routinely achieve temperatures of 10,000°F, and much higher temperatures are technically feasible.

Electrothermal phenomena are *volumetric*, that is, they generate heat within the material itself, a significant advantage in many processes. Fossil-fueled energy applies heat to a material's surface by means of radiation and convection, an inherently slow and inefficient method. With induction heating, where electrical energy is deposited directly within the material, the process can be reduced to several minutes or less.

In conventional drying, heat must diffuse into the material from the surface while moisture diffuses out—a slow process, since many materials are poor thermal conductors. If the rate of heating rises, however, the surface may become over-dry, resulting in cracking and general degradation. With microwave or radio-frequency radiation, this problem largely disappears, and drying rates can be increased greatly, which improves overall productivity, product yield, and product quality.

Electricity is an orderly energy form, in contrast to thermal energy, which is random. That orderliness means that electrical processes are *controllable* to a much more precise degree than thermal processes. Since electricity has no inertia, energy input can instantly adjust to varying process conditions, such as material temperature, moisture content, or chemical composition. Lasers and electron beams, for example, can produce energy densities at the work surface that are a million times more intense than an oxyacetylene torch. Their focal points can be rapidly scanned with computer-controlled mirrors or magnetic fields to deposit energy exactly where needed. This focusing can be a tremendous advantage in (for example) heating of parts precisely at points of maximum wear, thereby eliminating the need to heat and cool the entire piece.

Electrolytic, -thermal, and -motive effects can produce *synergistic combinations* as well. In the Hall process for reducing alumina to aluminum, ohmic heating keeps the cryolite bath in a molten state, while electrolysis causes pure aluminum to separate out and collect at the cathode. In a coreless induction melting furnace, electromagnetic induction melts the material and at the same time induces a strong electromotive stirring action, which enhances heat transfer and improves the homogeneity of the melt—crucially important in high-alloy castings.

Figure 1

Estimated CO_2 Reductions From Intelligent Electrification (millions of tons)

Sector	Year 2000	Year 2010
Information Technology	32-123	75-217
Commercial Heat Pumps	2	31
Freeze Concentration	3	18
Arc Melting	22-27	46-56
Plasma Processing	3	7
Electric Vehicles	1	6
Electric Transit & Freight	2	10

Better Business

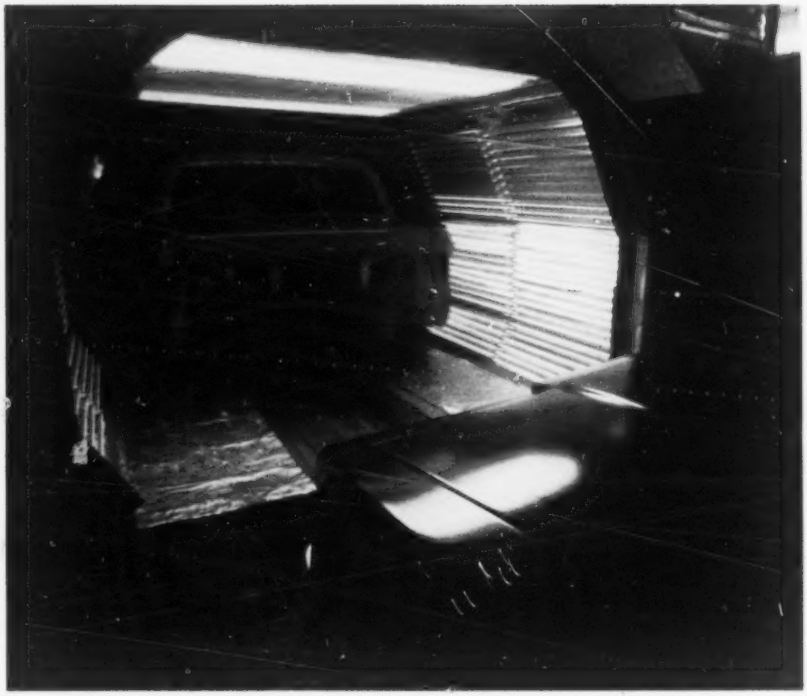
Electricity's economic attributes include the ability to reduce fixed costs. High energy density and precise control typically result in increased production rates, and that can reduce fixed costs per unit of product. With faster throughput, for example, labor, overhead, and interest on capital may be spread over a larger production volume. Thus, even when the cost premium of electricity increases the energy cost per unit, the total production cost per unit may be less.

Also, electrical process equipment is typically smaller than combustion equipment, because fuel-handling and environmental control are not required. That means that electrical production technology can foster an economy of reduced scale: Smaller equipment requires less space, and facilities can be decentralized and sited close to raw material sources and product markets—with consequent economic benefits.

High energy intensity and precise control permit greater flexibility of raw material resources than most conventional processes. Arc-furnaces, for example, are able to use either scrap or direct-reduced iron as a basic resource with little or no process modification.

For business—and the nation—electricity provides a flexibility in fuel supply. Combustion-based processes depend on the availability of specific fuel sources—combustion equipment is generally not very adaptable to fuel changes. Using electric processes places the choice of fuel on the electric utility, which is primarily concerned with efficient energy conversion and can take advantage of fuel diversity. Thus, over the long run, basic manufacturing processes and business practices can remain essentially the same, while utilities respond to changing fuel-market situations.

Likewise, as total resource requirements decline due to intelligent electrification, so will the need for imported fossil fuels. And that has a



In paint-curing, infrared heat replaces gas-fired heat, avoiding the "flash-off" of solvents.

positive impact on our balance of payments and national security.

Fewer Emissions

At the same time, electricity offers several inherent environmental benefits above and beyond its energy efficiency. Because electric end-use applications are clean at their point of application, they allow us to consolidate emissions at the site of power generation, making control far more efficient and effective. Moreover, electricity can be produced from a wide variety of fuels and technologies—including renewable resources such as wind, solar, and hydroelectric—that have far less impact on the environment than fossil fuels.

Consider the remarkable energy efficiency—and potential environmental effect—of the electric heat pump, in comparison to a gas-pulse combustion furnace. With a 10 percent loss in gas transmission and distribution, a furnace operating at 96 percent efficiency—which is highly efficient—achieves an estimated 86 percent total efficiency. That's certainly impressive by most standards. But by tapping renewable solar heat from the environment, commercially-available electric heat pumps can turn one unit of electricity input into 3.4 units of heat output. That's more than enough to compensate for the energy lost in converting raw fuel to electricity. Current heat pumps already offer a total resource efficiency of 99 percent. For every unit of primary fuel consumed in an electric power plant, 0.99 units of useful energy can be used to control temperature in a building that uses heat pumps, compared to only .86 units for a gas-powered furnace. And with new electric-generation technologies (with up to 50 percent efficiency), the advantages of electric heat pumps becomes more dramatic.

Here's what that might mean in a typical home in the Philadelphia area. Equipped with a highly efficient gas-pulse condensing furnace, that home would use an estimated 62.6 million Btus (MMBtu) of energy a year. The same home heated by an electric heat pump would use only 52.4 MMBtu.

It's a relatively optimistic prediction of market penetration, but by 2010, residential electric heat pumps could increase electricity use by 180,000 gigawatthours while at the same time reducing fossil-fuel use by 2,925,000 billion Btus. Obviously, generating electricity to meet increased demand will increase CO_2 emissions from electric power plants—we estimate that by 2010 CO_2 emissions could increase by 133 million tons a year. But the emissions avoided by using less fossil fuel would equal an estimated 169.6 million tons. The result: a net reduction of 37 million tons of CO_2 emissions. And that's only from the wider use of residential electric heat pump space conditioners. By 2010, the widespread residential use of electric heat pump water-heaters could increase electricity use by 86,000 gigawatthours, reduce primary energy use by 1,548,000 billion Btus, and cut emissions of CO_2 by an additional 27 million tons.

Applying Reasonable Economics to All

Such an analysis depends on a variety of complex assumptions, of course. What is the highest efficiency a particular end-use technology can achieve? How widely will it be accepted in the market? Efficiency, after all, isn't the only—or even the leading—reason that customers prefer one product over another. Industry studies have shown that appearance, quality, comfort, initial cost, safety, and reliability may all rank ahead of energy efficiency.

But concern about environmental impact and energy costs are difficult to dismiss. Indeed, some electric technologies offer inherent advantages that will help mitigate other potential environmental problems, as well. Electric infrared paint curing, for example, eliminates the need for gas-fired hot

WHAT'S PRACTICAL?

Just before the Earth Summit in Rio de Janeiro, the Bush administration completed an analysis of CO_2 emissions and concluded that with existing and planned efficiency measures alone (primarily from the electric utility industry), the U.S. could achieve reductions of its CO_2 emissions of 7 to 11 percent by 2000, close to stabilization at 1990 levels. The analysis mitigated against agreeing to a climate treaty that tied the parties to strict timetables.

The consensus in the industry is that in whatever way CO_2 emissions finally play out, the cost involved in moving toward stabilization will not be a small one. The study is optimistic, assuming a tremendously high degree of market penetration of energy-efficient technologies. In some cases, the assumptions go beyond what is technically feasible, let alone economically practical. A comparison to industry research—including the research for this article—shows that the administration report, while making an excellent defense of industry emission-reduction efforts, often assumes efficiency two or three times what is cost effective.

Also, electric utilities aren't the only ones responsible for the multi-ton CO_2 burden. The administration report ignores the greenhouse gas reductions that could be achieved in the transportation sector.

Earlier, in a draft of "Limiting Net Greenhouse Gas Emissions in the United States," the Department of Energy claimed that to cap CO_2 emissions at 20 percent below 1990 levels (as in an amendment Representative Henry Waxman (D–CA) later proposed and then withdrew) would cost $95 billion a year in carbon taxes—$500 per metric ton of carbon.

air, thus easing the problem of volatile organic compounds that "flash off" from solvent-based paints during conventional gas-powered curing. Direct-current plasma-arc furnace techniques used in metals fabrication may offer a method to recover valuable aluminum typically lost during resmelting—saving an estimated 700 million kilowatt-hours per year even as it provides an easy way to separate out potentially hazardous heavy metals for disposal.

Electric technologies are also being used increasingly to address specific environmental problems directly. Several research projects have used electric technologies to treat water and sewage, as well as medical and industrial solid waste. Rapid plasma-arc discharges induced in waste streams, for instance, create ozone and an array of free radicals that rapidly destroy pathogens and larger molecules, including those of various pesticides.

Still, the greatest benefit of new electric technologies will be their ability to allow us to get more work from the energy we use. Here are some examples that promise to reduce total energy use and decrease CO_2 emissions. Applying reasonable economics to all, we've projected the practical technical potential for each market in which these beneficial electric technologies could prosper. The results suggest that the environmental benefits of additional electrification could be enormous.

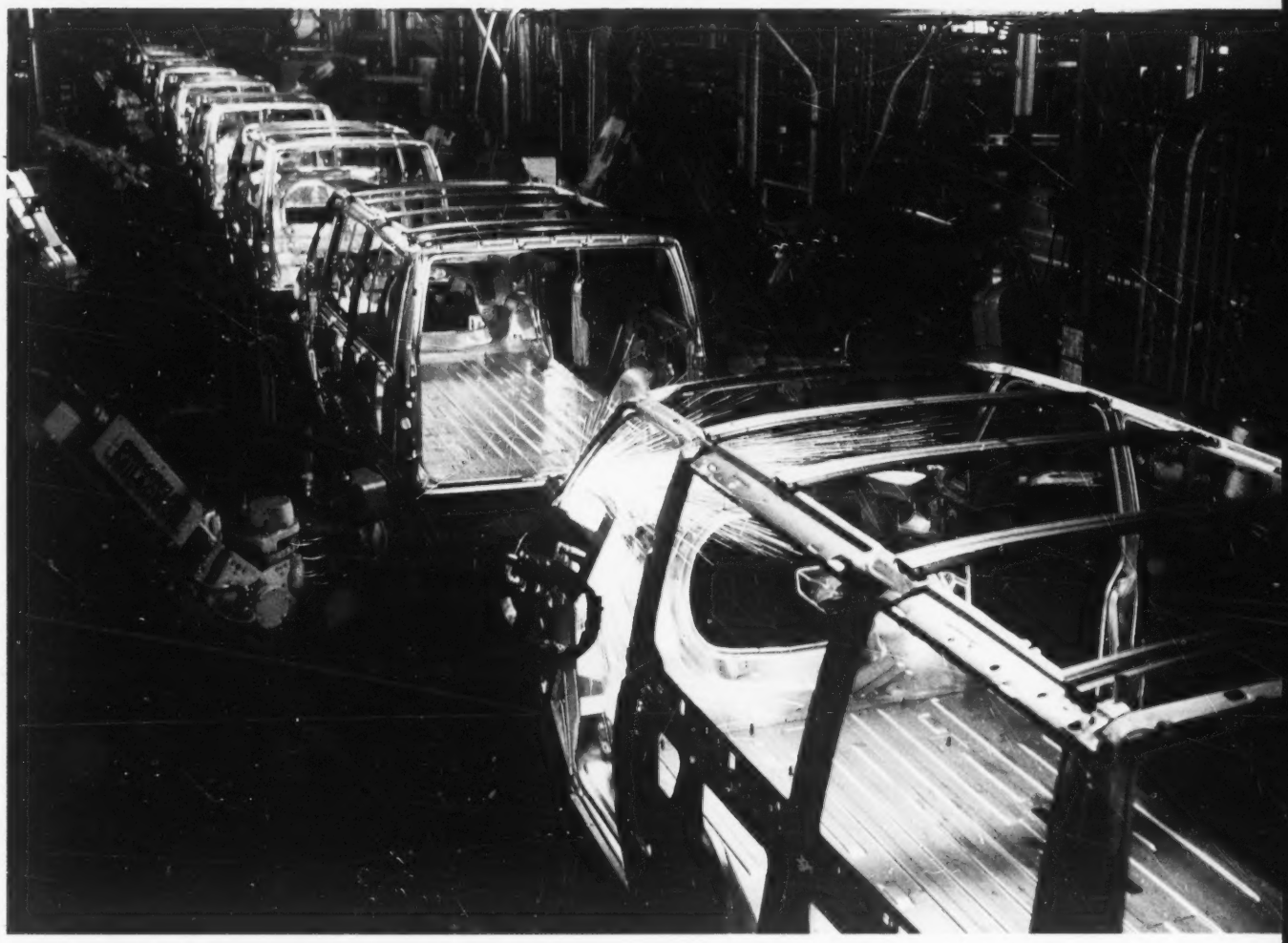
■ *Freeze concentration.* This electric-based technology separates water from liquid food products by converting some of the water into ice crystals, which are then drawn off. While conventional fossil-fuel-based evaporation methods require a net of about 700 Btus for every pound of water extracted, freeze concentration typically needs only 114 Btus per pound. When the systems are compared, the electric-based process has at least twice the overall energy efficiency as the natural-gas-based process. In terms of total energy requirements, freeze concentration can extract 2.5 pounds of water per 1000 Btus, compared to only 1.3 pounds of water using conventional evaporation methods. By 2010, the widespread use of freeze concentration to replace gas-based methods could increase total electricity demand by 16,000 gigawatts while it decreases fossil-fuel use by 512,000 billion Btus.

The result: CO_2 emissions could be reduced by 18 million tons.

■ *Electric transportation.* Electric motors boast energy efficiency of nearly 90 percent, compared to only about 30 percent for gasoline-powered engines. Despite energy lost in converting fossil fuels to electricity, the high efficiency of electric vehicles (EVs)—conservatively estimated to be 1706 Btus per mile—means EV vans can travel approximately 1100 miles per barrel of oil. The standard gasoline-powered van, which on average requires 7563 Btus per mile, achieves only 670 miles per barrel. Other studies have shown that electric-powered buses consume an estimated 137 Btus per passenger mile, compared to 1138 Btus per passenger mile consumed by gasoline-powered buses. An electric train uses only one-fourth as much primary energy per ton mile as a large semi-trailer truck. (See "The Electric Commute," page 6, in this issue.)

The result: By reducing primary fuel consumption, electric transit and freight could cut CO_2 emissions by 2 million tons a year by the year 2000. By 2010, emissions could be reduced by as much 10 million tons.

■ *Information Technologies.* Not so long ago, air mail was the fastest way to send a document from one part of the country to another. Today, that same document can be sent instantaneously in a radically different way, via electronic facsimile, or FAX. Recent studies have shown that FAX machines use one-half to one-seventh the energy required to send a document via overnight delivery services. The energy derived from a single barrel of oil can be used to send and deliver roughly 25,000 pages by courier, compared to more than 175,000 pages by FAX. Information technology has also made telecommuting—having electronic access to your workplace from home—a reality. The Congressional Research Service has estimated that telecom-



Robots weld van bodies at a GM plant in Baltimore. The precision electricity affords can increase productivity and decrease fixed costs.

muting could save 95 billion barrels of oil a year in direct fuel savings—and 3 billion in indirect fuel savings by relieving traffic congestion. Teleconferencing, the same report noted, could save the nation the equivalent of 7.9 million barrels of oil a year. Overall, information technologies could reduce fossil energy use by 2,400,000 billion Btus by 2000—reducing CO_2 emissions by almost 123 million tons.

The result: By the year 2010, using electronic information technologies to replace outdated technologies could cut CO_2 emissions by more than 217 million tons.

■ *Electric arc melting.* Used in place of conventional coal-powered furnaces, arc melting offers a far more energy-efficient method for metals fabrication; some studies indicate that arc melting can be more than three times as efficient, even taking into account conversion losses in electricity generation. By 2010, the widespread use of arc melting in the steel industry could increase electric demand by 23,000 gigawatts even while it reduces fossil fuel use by 713,000 billion Btus.

The result: Arc melting could reduce CO_2 emissions by 55 million tons by 2010.

■ *Electric induction griddle.* Even technologies with relatively modest applications can offer significant environmental benefits. The induction griddle, for instance, has an innovative surface material that allows foods to "pull" heat from the cooking surface as required, thus dramatically improving energy efficiency. Our studies show that by displacing natural gas, the induction griddle will add an additional 8,000 gigawatts of electricity demand while reducing overall primary energy use by .02 quads.

The result: Net CO_2 reductions by 2010 of 308,000 tons.

Adding It All Up

Admittedly, such estimates are simply predictions based on the best, most current information we have about market penetration and maximum technical potential. It is difficult to anticipate technological advances that could dramatically improve the energy efficiency of certain technologies, just as it is impossible to gauge with precision how widely individuals and industries will accept new methods.

Customer Satisfaction

Making these words come to life in an electric company is not easy.

Yet it's essential for success in today's increasingly deregulated and competitive energy marketplace.

Understanding your customers' needs, wants, and attitudes plays an absolutely vital role in turning these words into realities—specific company programs and actions that build strong customer loyalty to you as their preferred provider of electricity.

From doing more than 1000 research and consulting projects for over 100 utilities—in areas such as customer service delivery, marketing, demand-side management, communications, and supply-side planning and forecasting—we've also learned that customer needs, attitudes, and behavior are constantly changing.

Well-designed customer research and analysis is the best route to understanding these changes, meeting the challenges they present, and ultimately profiting from them.

For further information on our utility research, contact any of us at 617/661-0110:

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Still, such estimates are significant, even if they serve only as a guide to chart a future in which energy costs and environmental impact become an increasingly significant part of our decision-making. One thing is clear: The wider use of electricity in the future will help reduce our fossil-fuel consumption and resultant environmental emissions. By 2000, a portfolio of more than a dozen beneficial electrical technologies—from heat pumps and induction griddles to induction heating and plasma processing—could increase electricity use by more than 300,000 gigawatthours, even as they reduce fossil-fuel use by more than 2 quads. The result, just from these technologies, is that CO_2 emissions could be cut by 71 to 175 million tons. By 2010, primary energy savings could be even more impressive—as much as 7 quads. If intelligent electrification achieves its greatest promise, it could help reduce CO_2 emissions by more than 350 million tons by 2010.

Perspective, Hope, and Reality

After more than a century, the electricity age is still young. While in many instances fossil-fuel technologies have come close to their maximum energy efficiency, electric-based technologies are only beginning to demonstrate their power. The energy that inspired radio, television, computers, and lasers continues to inspire new and sometimes revolutionary applications. The development of high-temperature superconducting materials, for instance, could transform the delivery and storage of electricity, improving energy efficiencies far beyond anything we envision today. Meanwhile, steady progress in developing renewable generation technologies promises cleaner sources of electric power.

One thing is clear: The reality of electric power is far different from the image of a power plant belching smoke into the sky. As electricity powers our future, it will also provide a powerful means to protect our environment.

FINANCIAL REVIEW

THE NATION'S MOST CAPITAL-INTENSIVE INDUSTRY

In 1990, investor-owned electric utilities on average had to invest $3.03 to earn $1.00 of annual revenue, making the industry 1.7 times more capital-intensive than mining, the next most capital-intensive industry, and 3.3 times more capital-intensive than the average for all forms of manufacturing. (See Table 1.)

The industry's need for greater capital investment is even more striking when contrasted with the wholesale trade industry, which requires an investment of only $0.37 for each dollar of annual revenue. Or, to look at it another way, it takes four months for wholesale trade to earn revenues equal to its investment in fixed assets while it takes investor-owned electric utilities three years.

Although electric utilities' asset-turnover ratio—the amount of investment in assets divided by annual revenues—drifted upward for most of the 1980s, 1990 marked the third year in a row that the ratio dropped slightly. Since 1987, annual revenue growth averaged 4.1 percent, while net electric utility plant, which represents about 78.0 percent of total assets, grew at an average annual rate of only 1.0 percent. Accordingly, depreciation expense, which reduces rate base, increased at an average annual rate of 9.2 percent.

Recent forecasts suggest, however, that construction spending will grow over the next five years. In particular, utilities plan to expand transmission and distribution facilities and to install new equipment to comply with the Clean Air Act Amendments of 1990. Resultant growth in assets could reverse the declines in capital intensity recorded since 1987.

Contributed by Edison Electric Institute's Finance & Accounting Department

Table 1
Capital Assets Required per Dollar of Revenue for Major Industries—1990

Industry	Requirement
Investor-Owned Electric Utilities[1]	$3.03
Mining[2]	$1.74
Communications[3]	$1.09
Railroads[4]	$1.68
Investor-Owned Gas Utilities & Pipeline Industry[5]	$1.66
Manufacturing	
Nondurable Manufacturing Industries	
Food & Kindred Products	$0.77
Textile Mill Products	$0.74
Paper & Allied Products	$0.99
Printing & Publishing	$1.07
Chemicals & Allied Products	$1.09
Industrial Chemicals & Synthetics	$1.17
Drugs	$1.16
Petroleum & Coal Products	$1.03
Rubber & Miscellaneous Plastic Products	$0.73
Other Nondurable Manufacturing Industries	$0.55
Average of Nondurable Manufacturing Industries	$0.93
Durable Manufacturing Industries	
Stone, Clay, & Glass Products	$1.07
Primary Metal Industries	$0.83
Fabricated Metal Products	$0.70
Machinery Except Electrical	$1.03
Electrical & Electronic Equipment	$0.93
Transportation Equipment	$0.92
Instruments & Related Products	$1.11
Other Durable Manufacturing Products	$0.65
Average of Durable Manufacturing Industries	$0.91
All Manufacturing	$0.92
Retail Trade[2]	$0.52
Wholesale Trade[2]	$0.37

Note: Averages may reflect independent rounding. Some ratios may be higher than previously reported due to reclassifications within specific industries.

[1] Net total electric utility assets, average year-end 1989 and year-end 1989, and electric department operating revenues, 1990. *Statistical Yearbook/1989*, Edison Electric Institute, pp.85–6.

[2] Average quarterly assets and total annual sales, 1990. *Quarterly Financial Report of Manufacturing, Mining, and Trade Corporations*, U.S. Bureau of the Census, 1991, first quarter.

[3] Assets, average year-end 1989 and year-end 1990, and operating revenues, 1989. *Moody's Public Utility Manual*, 1991, Vol.1, p.2554.

[4] Net investment in plant and equipment, average year-end 1989 and year-end 1990, and operating revenues, 1990. *Yearbook of Railroad Facts*, Association of American Railroads ,1991, p.9.

[5] Assets, average year-end 1989 and year-end 1990, and operating revenues, 1988. *Gas Facts*, American Gas Association, 1991, pp.144 & 153.

STATISTICAL REVIEW

1991 NUCLEAR OUTPUT

Global nuclear energy output rose modestly in 1991 to just over 2 trillion kilowatthours, or one-sixth of the world's electricity, according to the International Atomic Energy Agency in Vienna.

The increase was due to better plant performance, the IAEA data show. In 1991, 420 nuclear plants were in operation (see Table 1), four fewer than in 1990, when worldwide nuclear generation totaled 1.9 trillion kilowatthours.

Four new units were connected to utility grids in 1991—one each in Bulgaria, China, France, and Japan. Eight reactors were shut down, five of them at the Greifswald station in the former East Germany. Construction started on two new nuclear units—one in Japan and one in South Korea.

At year's end, 76 nuclear units were under construction in 16 countries. Eight are scheduled to be connected to utility grids this year.

Adapted from USCEA's INFO newsletter, April 1992.

Table 1
Nuclear Power Reactors in Operation and Under Construction
As of December 31, 1991

	Reactors In Operation		Reactors Under Construction		Nuclear Electricity Supplied in 1991	
	Number of Units	Total MWe	Number of Units	Total MWe	Billion KWhrs	Percent of Total
Argentina	2	935	1	692	7.2	19.1
Belgium	7	5,484			40.4	59.3
Brazil	1	626	1	1,245	1.3	0.6
Bulgaria	6	3,538			13.2	34.0
Canada	20	13,993	2	1,762	80.1	16.4
China	1	288	2	1,812		
Cuba			2	816		
Czechoslovakia	8	3,264	6	3,336	22.2	28.6
Ex-USSR	45	34,673	25	21,255	212.1	12.6
Finland	4	2,310			18.4	33.3
France	56	56,873	5	7,005	314.9	72.7
Germany	21	22,390			140.9	27.6
Hungary	4	1,645			12.9	48.4
India	7	1,374	7	1,540	4.7	1.8
Iran			2	2,392		
Japan	42	32,044	10	9,192	209.5	23.8
Korea, South	9	7,220	3	2,550	53.5	47.5
Mexico	1	654	1	654	4.1	3.6
Netherlands	2	508			3.5	4.9
Pakistan	1	125			0.4	0.8
Romania			5	3,125		
South Africa	2	1,842			9.1	5.9
Spain	9	7,097			53.2	35.9
Sweden	12	9,817			73.5	51.6
Switzerland	5	2,952			21.7	40.0
Taiwan	6	4,890			33.9	37.8
United Kingdom	37	11,710	1	1,188	62.0	20.6
United States	111	99,757	3	3,480	612.6	21.7
Yugoslavia	1	632			4.7	6.3

Source: International Atomic Energy Agency

REGULATORY REVIEW

WP&L BLAZES A TRAIL

In May, the electric utility industry witnessed its first sulfur dioxide (SO_2) emission allowance transaction. In fact, there were two. Wisconsin Power and Light Company (WP&L) took the plunge, selling 10,000 allowances to the Tennessee Valley Authority (TVA) and from 15,000 to 25,000 to Duquesne Light Company, of Pittsburgh.

Each allowance (with an estimated price falling somewhere between $250 and $400 for WP&L) represents the right to emit one ton of SO_2, the main component in acid rain. 1990's Clean Air Act calls for a reduction from 19 million tons in 1980 to less than 9 million tons in 2000. To help meet that goal, the Act parcels out emission allowances to the country's utilities. "Clean" utilities can sell those credits to utilities that can't currently afford the higher costs of other compliance measures—that is, utilities that have reached the limit of their allotted allowances.

The credit purchaser can then protect ratepayers from higher rates often incurred by traditional, lockstep command-and-control emission regulations. The closer to 2000, the fewer and dearer the credits will be. At one point, it will be cheaper for a utility to buy cleaner fuel, install scrubbers, or take other measures than it will be to purchase additional credits and to maintain its emissions status quo.

Erroll Davis, WP&L's president and CEO, was upbeat. "This transaction demonstrates that a market-based approach can be an effective way to address environmental problems," he said. "[The Act] provides a means for utilities

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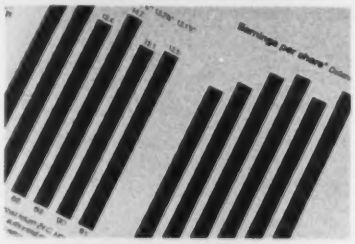

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Cover photo by Roger Ball.

THOMAS J. FLAHERTY

DOES 2+2=5?

In an era when the themes of management are restructuring, rightsizing, and reengineering, many electric utilities are turning inward, focusing on getting lean. Doing more with less, however, provides only one dimension of the competitive strategy required for a utility to grow and prosper in the 1990s and beyond. Nimbleness and flexibility may be essential for prosperity, but scale, position, and strength also will characterize the most successful members of the industry.

And the industry recognizes that fact, as indicated by the 25 mergers or acquisitions proposed or under consideration within the last five years. In a period of stagnant economic growth, mergers and acquisitions offer some utilities a natural opportunity to build competitive position by gaining economies of operation that reduce costs and enhance profitability. The resulting entity can achieve stability while remaining flexible and attain strength while remaining nimble.

The M&A Option

Electric utilities enter the 1990s with the longstanding structure of the industry rapidly assuming a new shape. Regulatory policy at the federal level—first in telecommunications, then in the gas industry, and now in electric utilities—has evolved to create an environment that emphasizes vigorous competition. Recent decisions from the Federal Energy Regulatory Commission (FERC) on market-based rates and transmission access have opened the door to both innovative service and pricing proposals and additional competitive challenges to electric utilities' revenue stream. At the same time, the National Energy Strategy bill promises to push the industry toward restructuring and a different way of viewing itself, its services, its markets, and its competitors.

The evolution of federal regulatory policies is slowly unleashing market forces that focus on a utility's separate vertical elements—generation, transmission, and distribution—rather than

Mergers and acquisitions can enhance strategic position, expand markets, and boost financial strength. But when is the sum of two entities greater than its parts? And do regulatory bodies get the same answer?

its integrated structure. Coupling FERC decisions and imminent changes in industry structure thus forces electric utilities to rethink their role in the provision of electricity to customers. In fact, the notion of electrics as energy service providers—multifaceted entities that meet customer energy needs by offering ranges of services from generation to brokering to demand-side management (DSM)—is becoming increasingly popular. In this fluid environment, though, utilities find it increasingly difficult to balance the growth of their integrated business while their vertical components become segmented.

In striving to achieve growth that will sustain enhanced earnings, electric utilities are faced with a narrow range of strategic alternatives: rely on the core business, diversify to non-core businesses, or expand the core business territory.

When the economy falters (as it has recently) and energy efficiency improves (as it has and will continue to do), many utilities find it increasingly difficult to realize the core business growth necessary to support increased earnings and the dividend growth to which shareholders have become accustomed. In fact, as risk-averse companies avoid the problems associated with adding to their base load, purchased power from other utilities or independent power producers becomes a preferred alternative. That reduces rate-base and earnings capacity, and the possibility of a shrinking rate base is a cause of concern for some utilities.

Likewise, growth through diversification is not the universal boon some once hoped. Consequently, some electric utilities consider the third alterna-

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IF ALL SHAREHOLDERS AND CUSTOMERS ARE TO BENEFIT, THE SURVIVING COMPANY MUST BE GREATER THAN THE SUM OF ITS PARTS. IT MUST CAPITALIZE ON THE ADVANTAGES AND MINIMIZE THE VULNERABILITIES THAT EXISTED PRIOR TO THE MERGER.

tive: to seek growth by expanding the service territory of their core business—that is, through the acquisition of or merger with another electric utility.

Although the essential desire to enhance competitiveness is the same in all mergers and acquisitions proposed thus far, the specific drivers of competition vary. A company might want to expand markets, capture operational synergies, protect strategic interests, reduce costs, attain financial strength, or increase its abilities across the board.

If its native market growth is limited, for example, or if the prospect for growth is more attractive in adjacent territories, a utility may seek to *expand markets* by combining itself with a neighbor. The combination of the Iowa holding companies—Midwest Energy with Iowa Resources in 1990 and IE Industries with Iowa Southern in 1991—illustrates this motivation. In both cases, the acquired company had limited service-territory growth prospects, and its utility neighbor provided the opportunity to participate in a larger, stronger market.

Likewise, the merger may promise *operational synergies* through economies of scale and scope that a utility cannot achieve by itself. For instance, it might want to use assets (generating plants, for example) more efficiently by taking advantage of system diversity or a broader mix of resources. Diversity and efficiency characterized the PacifiCorp acquisitions, which involved Utah Power & Light in 1989 and certain limited assets of Colorado–Ute and Arizona Public Service. The sharing of capacity resulting from the Utah Power & Light transaction created a more efficient system and deferred additional capacity construction.

As competition intensifies, utilities naturally try to *protect strategic interests* and recognize that sometimes the best defense is a good offense. This is especially true when another utility's actions could threaten the viability of a company or constrain its future options. Once Kansas City Power & Light announced a hostile offer for Kansas Gas and Electric, the strategic position of all Kansas utilities—including Kansas Power and Light, which was to be the ultimate acquiror—was inexorably altered.

A merger may *reduce administrative costs* also by consolidating corporate and service functions. Economy-of-scale advantages will appear in such areas as procurement, where the new entity can increase volume purchasing power or standardize materials, thus lowering total costs. The proposed combination of Southern California Edison and San Diego Gas & Electric (disapproved last year) was to have created more than $1 billion in such corporate and administrative cost savings over the first 10 years.

Finally, a weakened utility looking for *financial strength* may have few alternatives to a merger. Without the flexibility to follow other avenues of growth, it may have to hunt actively for a stronger partner. Otherwise, it may find itself the passive target of utilities seeking growth opportunities—and perhaps at bargain prices. This year's eventual acquisition by Northeast Utilities (NU) of the bankrupt Public Service Company of New Hampshire (PSNH) reflected exactly such bargain-hunting. NU was able to acquire PSNH's primary asset—the Seabrook nuclear station—at a discount.

Regardless of which path a utility thinks will lead to a more competitive position, both the acquiror and the target company take this trip together. If all shareholders and customers are to benefit, the surviving company must be greater than the sum of its parts. It must capitalize on the advantages and minimize the vulnerabilities that existed prior to the merger. The ability to do that will separate aggressive, competitively attuned companies from their cautious, inwardly focused, business-as-usual counterparts.

The Price of Value

The recent history of proposed or completed transactions offers insight into just how electric utilities and those who regulate them view the potential value of combination. Every transaction, even a failed one, has important lessons and establishes guideposts.

Since the fourth quarter of 1987, we've seen 25 proposed transactions at various stages, although only 11 actually reached closure. In all instances, however, the stated purchase prices demonstrate a common thread—companies are willing to pay substantial premiums for the value they hope to derive from the merger. In fact, in several recent, high-profile combination proposals, the suitor offered an average of 1.7 times the book value of the target company (see Table 1). The 1.7 multiple clearly demonstrates that the companies seeking to acquire control believe that the target utility's underlying assets would be vastly more valuable when combined with their own assets or deployed in a different way.

These transaction multiples also serve as a benchmark against which the merger target will likely evaluate an offer. Its board of directors has the ultimate responsibility on behalf of the shareholders to evaluate the bid. And although there may be several compelling reasons for mergers and acquisitions across the electric utility industry, most boards of directors would prefer for their company to remain independent, banking on its ability to weather the forces of competition—they're not going to jump on the first offer. Benchmarks created by past transactions, whether successful or abandoned, therefore become useful measures.

Recent transactions have also created broad standards by which regulators can evaluate future proposals. Most states require that an M&A transaction be in the public interest, but they differ on how to best assess that interest. Some require a positive demonstration of public benefit; others require a neutral demonstration that all parties, primarily customers, are not harmed by the proposed combination. But while there is significant leeway between "positive public benefit" and "no demonstrable harm," past proposals and transactions have started to form a body of precedent useful to both utilities and their regulators.

For example, Southern California Edison's proposal for combination with San Diego Gas & Electric sparked a public backlash (many said the merger had anti-competitive overtones) and resulted in the California legislature enacting a bill that specifically enumerated standards for assessing the public interest. The bill effectively established a yardstick for the California Public Utilities Commission and reflected the legislature's desire to encourage specific determination of the public interest. The seven principles comprising these standards raised the evidentiary hurdle and addressed all the relevant constituencies—the succeeding combined entity, customers, shareholders, competitors, employees, communities, and even state regula-

Table 1

Selected Electric Utility Mergers and Acquisitions

Acquiror	Target	Premium Over Market Price	Mutiple of Purchase Price Over	
			Net Income	Book Value
PacifiCorp	Utah Power & Light	34.5%	22.8x	1.8x
Southern Company	Savannah Electric & Power	18.8%	11.2x	1.8x
SCEcorp	San Diego Gas & Electric	30.0%	13.3x	2.0x
Midwest Energy Co.	Iowa Resources, Inc.	8.1%	11.4x	1.4x
Kansas City Power & Light	Kansas Gas and Electric Co.	36.7%	14.4x	1.4x
Kansas Power and Light	Kansas Gas and Electric Co.	62.0%	20.5x	1.6x
IE Industries	Iowa Southern, Inc.	30.3%	13.5x	1.9x
Average		**31.5%**	**15.3x**	**1.7x**

tors. [For more information on California's standards, see the "Regulatory Review" in the July–August 1991 *Electric Perspectives.*]

Although not universally applicable, California's definitions reflect the kinds of interpretations that might be applied to future M&A proposals. And they have one advantage: they already exist. In a way, they represent de facto precedent.

Recent proposed transactions offer guidance on other structural issues as well. If, for instance, the combination will provide substantial value, state regulators often rule (and, consequently, acquirors often propose) that the new entity should share this future value with customers through rate freezes or reductions. Entergy, in its announcement for its bid for Gulf States, promised a five-year rate freeze, for example. By the same token, previous transactions suggest how regulators think the new entity should recover purchase costs, share savings and synergistic benefits, and track actual cost savings.

Profile of a Transaction

1992 has provided several glimpses of electric utility mergers and acquisitions. Closure was reached on the acquisition of Public Service Company of New Hampshire by Northeast Utilities; Public Service of Colorado, PacifiCorp, and Tri-State Generation and Transmission Association acquired the assets of Colorado–Ute Electric Association; Entergy announced a bid for Gulf States Utilities; and there were others. Each proposed transaction reflected different underlying strategic rationales, although distressed financial situations often seemed to play a major role.

Among those transactions (proposed or completed) was the merger of the Kansas Power and Light Company (KPL) with Kansas Gas and Electric Company (KGE). This transaction has received much press, not only because it reached a successful close but also because it offers a structure for future proposals.

KPL is a combination utility providing electric and gas service in central, northern, and eastern Kansas, as well as gas service in western Missouri. KGE provides electric service in south central and southeastern Kansas. Figure 1 shows the respective service territories and an illustration of one of the transaction's major benefits—the synergies from overlapping territories.

The transaction was a result of a hostile though unsuccessful tender offer for KGE's common stock made by Kansas City Power & Light (KCPL) for $27 per share in mid-1990. KPL and KGE, on the other hand, were friendly and had worked in tandem before. They were both members of the Missouri–Kansas Power Pool. They owned generating capacity jointly, created a shared planning system for emergency relief to each company, competed in markets like Wichita, and had managers who communicated with each other on industry and operational issues. The announcement of KCPL's tender for KGE's common stock also set actions in motion within KGE to protect itself and in KPL to enhance its competitiveness, which is exactly the motivation underlying transactions of this type—electric utilities determining the best way to strengthen their respective strategic positions.

KPL made a rigorous and comprehensive analysis of several factors, including both parties' competitive positions and financial capabilities, and the merger's effects on customers and operations. The analysis had a singular purpose—to assess KPL's strategic options—and led to the decision by KPL management and the board of directors to extend a competing offer in October 1990 of $32 per share—1.6 times the book value.

KPL's proposed transaction structure provided an integrated plan for the merger. To begin with, KPL recognized the value of KGE as an entity within the larger company and en-

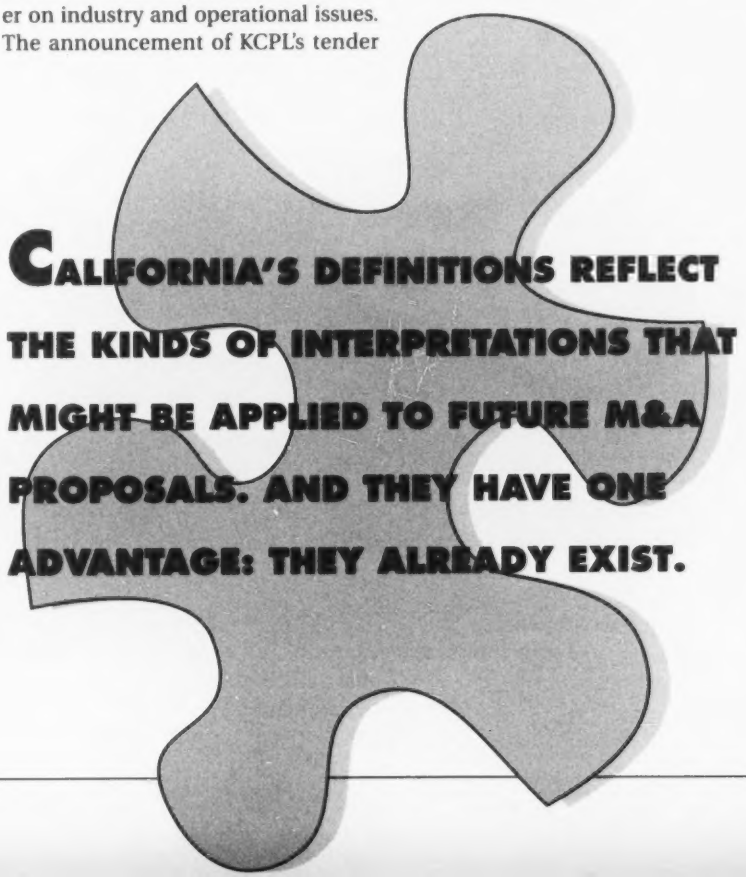
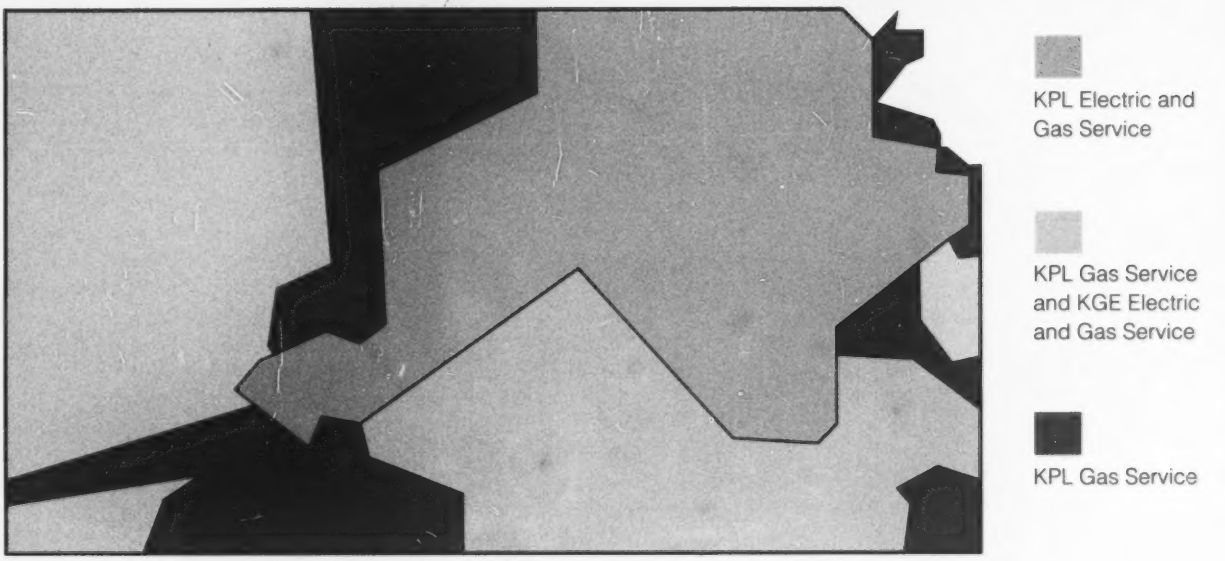

CALIFORNIA'S DEFINITIONS REFLECT THE KINDS OF INTERPRETATIONS THAT MIGHT BE APPLIED TO FUTURE M&A PROPOSALS. AND THEY HAVE ONE ADVANTAGE: THEY ALREADY EXIST.

Figure 1

Kansas Power and Light and Kansas Gas and Electric Service Territories Prior to Merger



sured its continued identity. But KPL formulated a number of proposals that added significant new substance to the transaction:

- a rate reduction at the transaction's closure;
- a rate moratorium (which the Kansas Corporation Commission extended to August 1995);
- the recovery of the acquisition adjustment from cost savings, and deferral of the adjustment to the conclusion of the rate moratorium;
- sharing additional cost savings with customers and shareholders;
- employing a cost-savings tracking mechanism;
- a commitment to no involuntary layoffs; and
- along with the maintenance of the KGE board of directors, the inclusion of KGE directors on the KPL board.

But the key issue was whether state and federal regulators would accept this premise: that the realization of substantial synergies and cost savings would be sufficient to recover the acquisition adjustment and the effective internal financing of the premium.

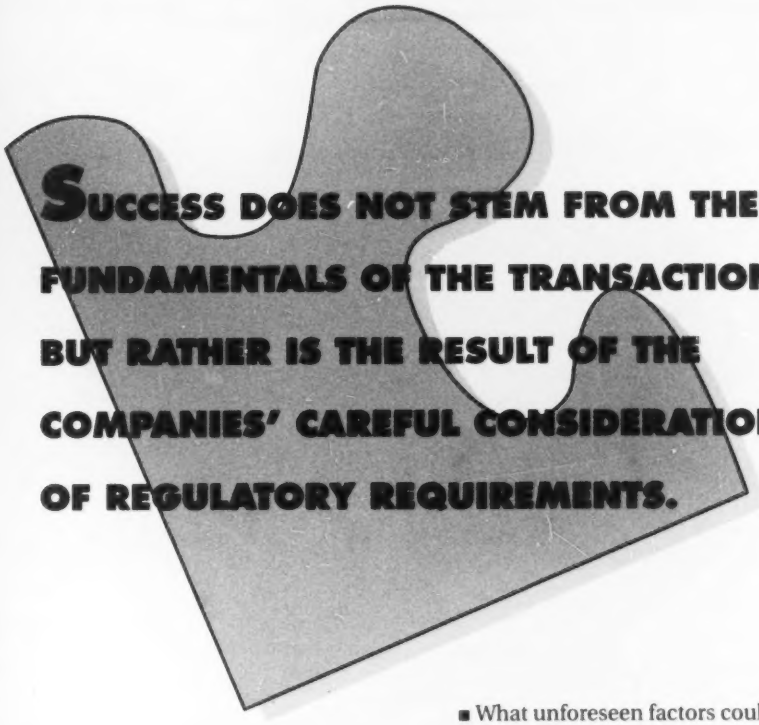
In other words, would the regulators believe that this merger would be economically fruitful for all parties?

Going Before the State

Beyond the addition of generating plants, the utilities' overlapping service territories provided a good opportunity to extract specific operational advantages. The presence of separate customer service offices would allow consolidation and minimize operating costs in labor, facilities, and fleet. KPL's and KGE's assessments of the combined companies identified efficiencies and cost savings in a variety of areas: distribution operations, production, purchasing and inventory, insurance, corporate and administrative functions, advertising, and management information systems.

On an annual basis, according to the assessments, these cost savings came to more than $30 million and easily exceeded the amount of the annual acquisition adjustment amortization. That assured that the supplemental savings would actually flow, in part, to the utilities' customers.

The merger approval process was arduous. It entailed filings before the Kansas Corporation Commission, Missouri Public Service Commission, FERC, Nuclear Regulatory Commission, Securities and Exchange Commission and the Department of Justice. Each body exercised specific jurisdictional control over different elements of the approval process, so they required the utilities to follow the process on multiple paths, each moving with its own pace, each headed in its own direction.



SUCCESS DOES NOT STEM FROM THE FUNDAMENTALS OF THE TRANSACTION, BUT RATHER IS THE RESULT OF THE COMPANIES' CAREFUL CONSIDERATION OF REGULATORY REQUIREMENTS.

State regulators played a critical role—most other approvals depended on theirs. Of paramount importance in the state proceedings was to demonstrate that the merger was in the public interest. Consequently, the bulk of hearings focused on two central themes—the availability and adequacy of cost savings to support the financial structure of the transaction, and the resulting financial capability of the combined company to meet its obligations and commitments on both financial and operational bases. That is, would the new entity be robust enough to meet its commitments and provide reliable service to its customers?

State regulators were concerned with several key questions:

- Was the price excessive for the value derived?
- Were the cost savings real or illusory?
- Could the savings occur without the merger?
- How would the new entity identify and quantify actual savings?
- Were the proposal's financial projections realistic?
- Could the combined company preserve its financial integrity?
- What unforeseen factors could affect the transaction?

Transmission access was not an issue for Kansas, for the simple reason that the two companies, in previous negotiations with FERC, had agreed to voluntary open access already, and the utilities and the public-power entities were satisfied that its provisions did not have an adverse effect on the public interest. In addition, it dispelled many anti-competitive fears regulatory bodies had concerning the merger.

The state regulatory process extended from December 1990, when the direct case was filed, through September 1991, when the utilities received their last approval. Although the FERC case was settled earlier in the year, other federal approvals were needed, and the transaction reached its ultimate conclusion in March 1992. Until then, every step in the complex process required detailed discovery on all related (and sometimes unrelated) issues; the utilities held numerous conferences with state commission staffs to explain facets of the transaction structure, particularly how they planned to support and defend the attainment of cost savings. Today, KPL and KGE have integrated their operations and are not only achieving, but exceeding, the expected level of synergies and related cost savings. (See the sidebar, "KPL/KGE Today.")

Making the Case, Carefully

The KPL-KGE transaction serves as a useful model for future ones, not necessarily because of the transaction's specific structure, but because it outlines the nature of inquiry regulators may follow in the future. Although no set definition of "the public interest" exists among state regulatory jurisdictions, a set of emerging principles does exist—there is no vast and rigid body of precedents that serves to guide utilities and regulators every step of the way, but the past few years have defined some rules of merger navigation which utilities must follow in order to gain regulatory approval.

The emergence of these principles points out the single most important factor affecting the approval of proposed transactions—success does not stem from the fundamentals of the transaction, but rather is the result of the companies' careful consideration of regulatory requirements.

As in the KPL/KGE merger, state regulation has played the most visible role in achieving merger objectives (although FERC, stressing issues not necessarily paramount for other regulatory bodies, can play an equally visible role when it stipulates rulings contrary to the state's, as in the NU/PSNH merger). The state commission has the regulatory responsibility for deciding whether a proposed transaction benefits the public, but utilities must also recognize the commission's interest in itself and the new ways it may have to function: how will it regulate the combined company and the remainder of the industry within its jurisdiction?

Successfully meeting the burden of regulatory proof requires detailed planning. That may be a truism—companies that propose mergers or acquisitions generally recognize the need for

planning. The vagueness of the public-interest standard, however, and the evolving nature of its interpretation can complicate even the strongest plans.

In planning for the regulatory proceeding, therefore, a company should overplan to ensure that the transaction addresses all contingencies at the outset. There are several actions to take:

- establish a clear rationale for the proposed combination;
- identify the benefits of the transaction in specific terms to all involved stakeholders;
- provide detailed documentation of those benefits;
- demonstrate near- and long-term effects to the combined company;
- identify the interdependencies of the transaction structure components; and
- describe the plan for accomplishing intended benefits.

In essence, the proposing company should assume the role of fact finder and challenge its own application under a rigorous application of the relevant standards and principles.

But what of the specific story that must accompany the logic, numbers, and facts presented? The case-in-chief must thoroughly address three key areas: strategic rationale, financial implications, and customer impact. The presentation begins with elements of the strategic and financial stories, such as merger synergies and earnings-per-share accretion or dilution. Once those are established, the presentation then addresses the effects on the various individual constituencies in such areas as service quality, benefits distribution, employment security, risk assumption, and economic impact.

While the attention given to each story section may differ by transaction, those three main elements provide the foundation for evaluation.

Strategic Rationale. In developing the "strategic" part of the story, utilities should recognize that the strength of subsequent authorizations have a foundation in the quality and thoroughness of this presentation. Indeed, the company demonstrates the quality of its transaction argument in its discussion of the compelling reasons for the transaction. This discussion addresses the factors surrounding the offer and the ways in which the strategic position of the new entity would be enhanced. This strategic position should focus on such elements as competitive position, capacity, transmission access, average price, and overall capabilities. The rationale also recognizes the benefits derived from synergies—for both the combined company and its customers.

Financial Implications. A primary consideration of regulatory bodies is whether the combined company will be financially healthy and capable of meeting its obligations—both financial and service-related. The demonstration of financial health, however, extends beyond traditional financial integrity measures (such as pre-tax interest coverage and net cash flow to capital expenditures). To what extent does the combined company depend on the merger integration process to yield the benefits necessary to achieve indicated financial results? To what extent does it depend on regulation to provide sufficient support to the structural aspects of the transaction itself (e.g., premium recovery)?

Here, the presentation of evidence must establish an implementation plan to provide both near- and longer-term financial results. One feature of many proposed transactions has been a moratorium on rate increases. This

KPL/KGE TODAY

The original merger transaction between the Kansas Power and Light Company (KPL) and the Kansas Gas and Electric Company (KGE) incorporated a number of innovative elements. As artful a proposal as KPL's was, however, the Kansas Corporation Commission (KCC) applied an additional stroke with its own brush to enhance the proposal's definition. The KCC modified the structure and amount of the rate reduction and moratorium components, and also introduced an operations and maintenance expense index for the utilities to use in measuring savings achieved from the combination of their utilities.

"The KCC established an indexing mechanism that determines the level of recoverable operations and maintenance expense in the future," says John E. Hayes, Jr., chairman and CEO of KPL (which is now called Western Resources, a holding company, a change unattached to the KPL/KGE merger itself). "This index, in effect, sets the target for cost savings by linking recovery of the acquisition premium to the ability of our combined company to hold expense growth below the indexed amount."

"We welcome such creative thinking and are confident we will meet the challenge and demonstrate the substantial synergies our merger has provided," Hayes stated.

KPL is in the first year of combined operations after having closed the transaction in late March. Adjusting to this new (though much desired) set of circumstances, however, has not slowed the company down in trying to integrate the two entities and pursue the merger's benefits.

"We began planning for integration of our two companies shortly after filing our cases with our regulators," recalls KPL's Steven L. Kitchen, executive vice president and CFO. "We made it a high priority to be ready to bring our operations together rapidly and to begin to harvest the cost savings so apparent to us."

While the KCC will not formally review the actual cost savings accomplishments from the merger until the filing of the next rate case in 1995, KPL has already reduced staff through attrition and begun to consolidate field offices with KGE.

"We are optimistic that when we reach the level of steady-state operations that we will fully reap the merger benefits we anticipated," Kitchen noted, "and our customers will enjoy additional savings."

stipulation automatically stretches the forecast period to provide adequate information on how the merger or acquisition will affect the combined company when rates are rebaselined in the future.

Stakeholder Impact. This is the focal point of regulatory review. The view of relevant constituencies is broad and addresses customers, employees, share-holders, fixed-income investors, competitors, and communities.

Is it in the public interest? The most visible lightning rod for this evaluation is the combination's effect on rates. Given the normal differences in electric rates between companies and customer classes, an initial examination focuses on whether the two entities of the merger will average customer rates in the future or whether each company's customers will maintain unique and separate rates. (This subject requires careful forethought to avoid cross-subsidization issues.)

The commission covers the treatment of all other constituencies, internal and external, asking in essence, "Are these groups being handled fairly and equitably?" It will dismiss a transaction that demonstrates inequity by providing favoritism to one set of constituents—the transaction will not meet the broader public-interest standard if clear winners and losers can be identified.

The public-interest standard also extends beyond simply how native-load customers are affected. Several recent mergers or acquisitions, including PacifiCorp/Utah Power & Light and Northeast Utilities/Public Service Company of New Hampshire, became embroiled in controversy when the impact on other utilities became the focus in transmission-access negotiations. On the federal level, FERC policy has anti-competitive concerns and, it seems, bends toward open access. Indeed, for the time being and regardless of the right or wrong of it, if a utility wants to move a merger proposal successfully through FERC, it must be ready to provide transmission access. Though FERC policy continues to evolve, open access is a de facto requirement—just one of the many factors to weigh when a utility analyzes merger pros and cons.

FOR THE TIME BEING AND REGARDLESS OF THE RIGHT OR WRONG OF IT, IF A UTILITY WANTS TO MOVE A MERGER PROPOSAL SUCCESSFULLY THROUGH FERC, IT MUST BE READY TO PROVIDE TRANSMISSION ACCESS.

But, when other utilities receive transmission access, approval of merger transactions at the state level focuses more closely on the impact on native-load customers. While neither PacifiCorp nor Northeast Utilities intended to constrain the access demands of other electric utilities, neither anticipated that native load might have a lower priority than external utility transmission, and so the extent of the controversy was somewhat of a surprise. The FERC/state commission conflict and the opportunity-cost pricing solution are critical components of both federal and state inquiry.

Creeping to the Hidden Benchmark

The number of transactions proposed in the last five years suggests that interest in the combination of electric utilities is increasing. But will the pace of these potential mergers or acquisitions increase too, or are we merely viewing the exploitation of circumstances?

The recently announced offer by Entergy for Gulf States Utilities indicates that financially capable companies will continue to be in the market for attractive properties. Where substantial cost savings are available to customers (from fuel savings, for example, derived from combined Entergy/Gulf States Utilities generation), the likelihood of the merger's consummation increases.

But, again, regulatory process and rationale are still in an evolutionary phase. The number of transactions that may arise in the future will likely depend on the way decisions are made concerning current and near-future proposals, rather than those of the distant past. The KPL/KGE merger indicates that success comes from artfully structured transactions and that the utilities can leap the hurdles of obtaining approvals and meeting evolving public-interest standards. Indeed, until this transaction was successfully completed, the history of other pro-

posed transactions—such as Southern California Edison/San Diego Gas & Electric and WPL Holdings/Madison Gas & Electric—suggested that even deals involving strong, financially fluid companies or holding companies might not be successful.

The successful merger or acquisition of the future will depend on

- thorough planning by the involved utilities,
- circumstances unique to that specific situation,
- comprehensive and detailed supporting material, and
- unrelenting attention to the approval process.

In other words, all proposed mergers and acquisitions are not created equal, and success depends on the proper alignment of several factors. But the most unusual aspect of these conditions is that as more proposals crop up, the "model" transaction metamorphoses from that which is successful to that which is required. The effects of this phenomenon are not only that the standards for approval become better defined through experience, but also that the hurdle for approval may be raised even higher than the previous transaction's—especially as the standard relates to the combined company's benefits distribution and rate commitments.

Regulators will scrutinize future proposals not only on their own merits but also in light of those that have preceded them. This "hidden benchmark" increases the planning requirements of the proposing companies. It suggests that they study the previous decisions contributing to the regulatory standards they must meet, as much as they focus on the uniqueness of their proposed transaction. It is likely that proposed mergers and acquisitions will be subject to regulatory "decision creep" as more refined and innovative approaches appear.

The evolving nature of the electric utility industry suggests that mergers and acquisitions will become part of the industry's maturation. Utility combinations have served the public interest in the past and were responsible for the advancement of the industry to its present state. As competition becomes sharper, its effects will create companies with strategic advantage—and companies without it. To compete successfully will require that electric utilities maximize competitive position and minimize vulnerability. This will place a premium on efficiency and competitiveness, making mergers and acquisitions a vibrant part of the industry's future, not just another financial fad.

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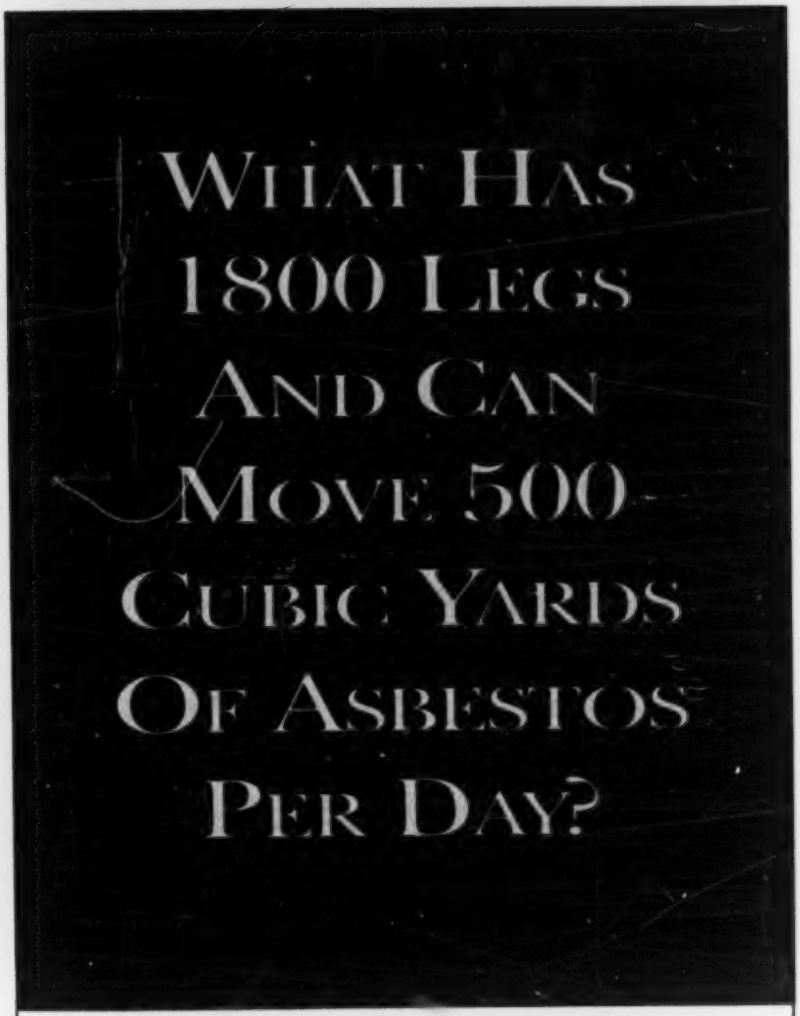

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FINANCIAL REVIEW

FIRST QUARTER EARNINGS PER SHARE UP 2.1 PERCENT

Despite a drop in allowance for funds used during construction (AFUDC) and phase-in plan accruals totaling about $300 million, investor-owned electric utility earnings per share for the first quarter rose 2.1 percent from 1991 to 1992. Increases in sales (1.1 percent) and revenues (3.7 percent) combined with a $27.4 million decrease in nonrecurring income-reducing items to push earnings per share from $0.48 to $0.49 before extraordinary items. On an annual basis, earnings per share increased 6.2 percent, rising from $1.78 for the period ending March 31, 1991, to $1.89 a year later. (See Table 1.)

After extraordinary items, earnings per share increased 2.0 percent on a quarterly basis. Income resulting from several companies' recognition of unbilled revenues contributed significantly to the $85 million in extraordinary income booked in the first quarter of 92 and the $108 million booked in 91. For the twelve-month period ending March 31, earnings per share after extraordinary items grew 3.4 percent from 1991 to 1992.

Income Statement

Total electric operating revenues increased from $36.5 billion for the first quarter of last year to $37.9 billion for the first quarter of this year, in part due to the 1.1 percent increase in sales stimulated by improved economic conditions. (See the "Statistical Review" in this issue.) The relatively large number of rate cases approved since the beginning of 1991, together with the impact of fuel adjustment clauses, power purchases, and

Table 1
Investor-Owned Electric Utility Industry Statement of Income
(Millions of Dollars)

	Three Months Ending March 31,			Twelve Months Ending March 31,		
	1992	1991r	% Change[3]	1992	1991r	% Change[3]
Total Electric Operating Revenues[1]	$37,861	$36,497	3.7	$158,053	$150,707	4.9
Electric Operating Expenses						
Fuel	$7,106	$7,346	(3.3)	$30,305	$31,727	(4.5)
Purchased Power & Net Interchange	3,620	3,390	6.8	14,510	13,119	10.6
Other Operation & Maintenance	10,379	9,809	5.8	42,772	40,249	6.3
Depreciation & Amortization	4,299	4,069	5.7	16,764	15,780	6.2
Costs Deferred Under Rate Phase-In Plans	32	(68)	N.M.	(133)	(555)	(76.1)
Taxes Other Than Income Taxes	3,261	3,025	7.8	12,653	11,702	8.1
Income Taxes: Federal & Other	1,707	1,372	24.4	8,155	7,047	15.7
Deferred Income Taxes	531	692	(23.3)	1,863	1,949	(4.4)
Investment Tax Credits, Net	(90)	(41)	120.3	(254)	(162)	57.2
Total Electric Operating Expenses	$30,846	$29,595	4.2	$126,636	$120,858	4.8
Electric Operating Income	$7,015	$6,902	1.6	$31,417	$29,849	5.3
Other Utility Operating Income	712	710	0.3	1,183	1,212	(2.4)
Total Utility Operating Income	$7,727	$7,612	1.5	$32,600	$31,061	5.0
Other Income & Deductions, Net	$269	$197	36.2	($1,061)	($1,137)	(6.7)
Phase-in Deferrals	41	109	(62.7)	309	622	(50.3)
Allowance for Other Funds Used During Construction	138	212	(34.9)	613	981	(37.5)
Total Income Before Interest Charges	$8,175	$8,130	0.6	$32,462	$31,527	3.0
Interest Charges						
Interest on Long Term Debt	$3,759	$3,828	(1.8)	$15,317	$15,509	(1.2)
Other Interest Expenses & Charges	378	437	(13.3)	1,557	1,684	(7.5)
Allowance for Borrowed Funds Used During Construction	(140)	(179)	(21.4)	(587)	(824)	(28.8)
Net Interest Expenses & Charges	$3,997	$4,086	(2.2)	$16,287	$16,369	(0.5)
Net Income Before Extraordinary Items	$4,178	$4,043	3.3	$16,175	$15,159	6.7
Extraordinary Items	(2)	0	N.M.	(375)	(28)	(1,220.9)
Cumulative Effect of a Change in Accounting Principle	85	108	(21.5)	110	108	1.2
Net Income	$4,261	$4,152	2.6	$15,909	$15,239	4.4
Preferred Dividends Declared	502	482	4.1	1,976	1,979	(0.1)
Net Income Available for Common	$3,759	$3,669	2.4	$13,933	$13,260	5.1
Common Dividends Declared	3,708	3,481	6.5	14,076	13,239	6.3
Additions to Retained Earnings	$51	$188	(72.8)	($143)	$21	N.M.
Average Shares Outstanding (Millions)	7,551	7,430	1.6	7,528	7,398	1.8
Earnings Per Share Before Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.49	$0.48	2.1	$1.89	$1.78	6.2
Earnings Per Share After Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.50	$0.49	2.0	$1.85	$1.79	3.4
Common Dividends Per Share[2]	$0.49	$0.47	4.3	$1.87	$1.79	4.5

SOURCE: Edison Electric Survey Data and Standard & Poor's Compustat II Database Service.
[1]Revenues are adjusted for intra-industry electricity sales for resale.
[2]Based on average shares outstanding as reported to Edison Electric Institute by survey respondents and adjusted for stock splits.
[3]Percent changes may reflect independent rounding.
r-Revised to reflect company restatements.
N.M.-Not Meaningful.

Table 2
Investor–Owned Electric Utility Industry Balance Sheet
(Millions of Dollars)

Assets	March 31, 1992r	March 31, 1991r	% Change[2]
Utility Plant[1]			
Utility Plant (Including Nuclear Fuel)	$537,616	$519,311	3.5
Less Accumulated Depreciation	173,123	159,951	8.2
Total	$364,493	$359,360	1.4
Construction Work in Progress	22,627	22,035	2.7
Net Utility Plant	$387,120	$381,396	1.5
Investments	30,374	26,983	12.6
Current Assets	45,761	44,577	2.7
Deferred Debits	37,455	35,694	4.9
Total Assets	$500,711	$488,649	2.5
Capitalization & Liabilities			
Capitalization			
Common Stock	$98,513	$94,754	4.0
Retained Earnings	53,481	53,204	0.5
Preferred Stock	24,965	25,475	(2.0)
Long-Term Debt	176,623	171,195	3.2
Total Capitalization	$353,582	$344,628	2.6
Current Liabilities			
Short-Term Debt	$9,800	$11,215	(12.6)
Long-Term Debt Due Currently	8,826	7,899	11.7
Other Current Liabilities	36,164	35,684	1.3
Total Current Liabilities	$54,790	$54,798	(0.0)
Deferred Credits			
Capital Lease Obligations, Non–Current Portion	$3,411	$3,788	(9.9)
Accumulated Deferred Income Taxes	54,289	52,130	4.1
Accumulated Deferred Investment Tax Credits	14,664	15,380	(4.7)
Other Deferred Credits	19,974	17,926	11.4
Total Deferred Credits	$92,339	$89,223	3.5
Total Capitalization & Liabilities	$500,711	$488,649	2.5

SOURCE: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.

[1]Includes non-electric plant.
[2]Percent changes may reflect independent roundings.
r-Revised to reflect company restatements.

demand-side management programs, also contributed to the 3.7 percent revenue increase.

Rising from $29.6 billion to $30.9 billion, total electric operating expenses increased 4.2 percent on a quarterly basis. Increases in purchased power and net interchange, other operation and maintenance, and tax expenses were moderated somewhat by decreases in fuel costs and deferred tax expenses. The 6.8 percent increase in purchased power and net interchange expenses and the 5.8 percent increase in other operation and maintenance expenses were both associated with several scheduled outages at nuclear generating plants. The 23.3 percent drop in deferred taxes is primarily the result of a regulatory decision disallowing one company to recover costs associated with an abandoned project.

The first quarter electric operating ratio rose from 81.1 percent in 1991 to 81.5 percent in 1992. Electric operating income increased 1.6 percent on a quarterly basis, from $6.9 billion to $7.0 billion.

AFUDC dropped 28.9 percent from $391 million in the first quarter of 1991 to $278 million in the first quarter of 1992. As a percentage of net income available for common, AFUDC slid from 10.6 to 7.4.

Total phase-in plan accruals fell $177 to a mere $9 million. The 95.0 percent plunge marked a dramatic acceleration in the downward trend begun in 1990 when deferred phase-in plan expenses began to be recognized on the income statement and recovered. Costs deferred under rate phase-in plans include an allowed rate of return to compensate the utility for the carrying costs of the deferrals and to allow a return on investment. Because the initial assumptions governing such deferred costs were based on higher interest rates, taxes, and fuel costs than those that actually prevailed in the first quarter of this year, regulatory stipulations required many companies to reduce the level of their cost deferrals. In addition, as the result of a 1991 rate case settlement, one company was directed to stop deferring costs on a portion

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Public Utilities Fortnightly

- **Third highest return on common equity for a combination utility in 1991. Source: C.A. Turner Utility Reports.**
- **Bond Rating: AA, Standard & Poors; Aa2, Moody's Investors Service.**
- **Dividend increases for 11 consecutive years.**
- **Commercial Paper Rating: A1, Standard & Poors; P1, Moody's Investors Service.**

Madison Gas and Electric Company (MGE) is an investor-owned public utility located in Madison, Wisconsin. The company generates, transmits and distributes electricity to nearly 114,000 customers. MGE also transports and distributes natural gas to more than 90,000 customers.

For more information, write or call J.T. Krzos, Madison Gas and Electric Company, P.O. Box 1231, Madison, WI 53701-1231. (608) 252-7923.

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Henry Casley, Managing Director
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John Deane, Finance Director

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of a nuclear unit and to write off costs previously deferred on the same unit.

Compared to the first quarter of 1991, interest on long-term debt declined 1.8 percent, and other interest expenses and charges declined 13.3 percent. Largely as a result, the pre-tax interest coverage ratio without AFUDC rose from 2.33 times to 2.46 times.

Common stock dividends increased from $3.5 billion to $3.7 billion on a quarter-to-quarter basis. The reinstatement of dividend payments by two companies that had suspended them and the growth in the number of shares outstanding combined with dividend increases in general to produce the 6.5 percent increase. For the twelve months ending March 31, 1992, the average return on common equity was 11.6 percent, up from 11.1 percent for the previous twelve months.

Balance Sheet

Over the same period, construction work in progress (CWIP) grew for the first time since the first quarter of 1985. Rising from $22.0 billion as of March 31, 1991, to $22.6 billion as of March 31, 1992, CWIP was boosted primarily by the costs associated with the construction of a single nuclear unit. The 2.7 percent increase led to a slight rise—from 6.1 to 6.2— in the ratio of CWIP as a percentage of net plant in service. (See Table 2.)

Investments increased 12.6 percent over the period, growing from $27.0 billion to $30.4 billion. Concentrated in areas related to utilities' core business, investments included nuclear decommissioning funds, oil and gas properties, gas reserves, marketable securities, finance and equipment leases, and joint ventures and partnerships.

Total capitalization increased 2.6 percent from $344.6 billion to $353.6 billion due to the 4.0 percent increase in common stock and the 3.2 percent increase in long-term debt. The stock increase was associated with an estimated $3.0 billion in common stock offerings during the period as reported by Ebasco Business Consulting Services, Inc., which excludes new money from stock purchase plans from its total. These new offerings increased the common stock equity ratio to 43.0 percent for the year ending March 31, 1992, up slightly from the 42.9 percent of the previous year.

The 3.2 percent increase in long-term debt, from $171.2 billion to $176.6 billion, reflects the fact that many companies took advantage of low interest rates by refinancing and issuing long-term debt during the first quarter of 1992. According to Ebasco, the amount of long-term debt issued during the period, including refunding, totaled $12.4 billion.

Several companies used excess proceeds from debt refinancings and new common stock offerings to reduce outstanding short-term debt, which declined 12.6 percent over the twelve month period.

Tables 1 and 2 are based on unaudited reports submitted by a sample representing all investor-owned electric utility companies. Supplemented with Standard & Poor's Utility Compustat II Database Service, data are revised to reflect all company restatements.

Contributed by the Finance and Accounting Division of Edison Electric Institute.

STATISTICAL REVIEW

FIRST QUARTER SALES UP

Driven by relatively strong commercial and industrial demand, electricity sales to ultimate customers by investor-owned electric utilities grew 1.2 percent, rising from 509.9 million MWh (megawatthours) for the first quarter of 1991 to 515.1 MWh for the first quarter of 1992. Sales to commercial customers grew 1.5 percent, and sales to industrial customers grew 2.3 percent. Sales to residential customers, however, dropped 0.7 percent, offsetting some of that gain.

The increase in commercial and industrial sales reflects the economic recovery underway during the first quarter: real gross domestic product (in 1987 dollars) grew 2.7 percent, its largest quarterly increase since the end of 1988. Similarly, the decrease in residential sales reflects the unusually mild weather that characterized the first quarter: heating degree days were 12.8 percent lower than normal.

Revenues for the first quarter increased 2.8 percent. The growth resulted from rate increases approved in 1991 and, to a lesser extent, the impact of fuel adjustment clauses; the revenue effects of both factors tend to lag the sales period in which they occur. Revenues from residential customers grew 3.1 percent; from industrial customers, 2.8 percent; and from commercial customers, 2.4 percent.

The number of residential customers, who make up slightly more than 88 percent of all customers, grew at the same rate as total customers.

Contributed by the Finance and Accounting Division of Edison Electric Institute.

Table 1
First Quarter Customer, Sales, and Revenue Data for Investor-Owned Electric Utilities

	Three Months Ending March 31,			Twelve Months Ending March 31,		
	1992	1991	% Change	1992	1991	% Change
Number of Customers						
Residential	75,128,045	74,341,373	1.1	74,713,931	73,942,690	1.0
Commercial	9,405,344	9,308,719	1.0	9,371,615	9,303,547	0.7
Industrial	383,355	381,230	0.6	394,512	393,356	0.3
Street & Highway	147,958	142,537	3.8	146,524	141,851	3.3
Other Public Authorities	171,006	167,334	2.2	169,375	160,464	5.6
Railroads	23	24	(4.2)	23	24	(4.2)
Interdepartmental	467	476	(1.9)	469	476	(1.5)
Total Customers	85,236,198	84,341,693	1.1	84,796,449	83,942,408	1.0
Electricity Sales (MWh)						
Residential	175,140,545	176,332,733	(0.7)	688,519,013	670,788,994	2.6
Commercial	148,146,927	145,911,950	1.5	623,898,681	612,272,461	1.9
Industrial	174,226,679	170,332,617	2.3	718,082,578	716,084,557	0.3
Street & Highway	2,792,803	2,745,496	1.7	10,562,694	10,472,452	0.9
Other Public Authorities	13,875,718	12,862,232	7.9	55,799,085	50,899,355	9.6
Railroads	641,406	657,765	(2.5)	2,530,988	2,514,141	0.7
Interdepartmental	241,536	200,209	20.6	1,239,433	1,203,065	3.0
Total Sales	515,065,614	509,043,002	1.2	2,100,632,472	2,064,235,025	1.8
Revenues ($000)						
Residential	14,518,398	14,088,508	3.1	58,570,156	55,262,784	6.0
Commercial	11,143,551	10,883,809	2.4	48,132,825	46,082,092	4.5
Industrial	8,533,199	8,303,158	2.8	36,300,541	35,431,958	2.5
Street & Highway	330,626	321,649	2.8	1,291,943	1,249,114	3.4
Other Public Authorities	688,298	659,095	4.4	2,870,130	2,590,154	10.8
Railroads	42,515	42,665	(0.4)	177,549	166,794	6.4
Interdepartmental	19,110	21,018	(9.1)	74,642	97,289	(23.3)
Total Revenues	35,275,698	34,319,902	2.8	147,417,786	140,880,185	4.6

Source: Edison Electric Institute, Statistics Department.